

Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

January 5, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-1

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has exercised the second of three one-year renewal options with the Range Systems Division of Ling-Temco-Vought to provide computer services for the major contractors operating at the NASA-Michoud Assembly Facility, New Orleans.

The new \$2,704,349 extension of Ling-Temco-Vought's (LTV) basic cost-plus-award-fee contract was awarded by Michoud's parent organization, the Marshall Space Flight Center near Huntsville, Ala. The contract, which will continue in force until January 8, 1969, increases the total value of LTV's contract to \$7,641,584.

The Dallas based firm was originally selected in December, 1965 to provide computer services at the Michoud installation in New Orleans and at its Computer Operations Office in nearby Slidell, La.

The services include operation and maintenance of a large complex of digital and analog computers, data transmission systems, data reduction systems and related electronic equipment.

LTV also provides computer services to contractors operating at NASA's Mississippi Test Facility in Hancock County, Mississippi.

Michoud is the assembly site of the Up-rated Saturn I and Saturn V first stages, designed for use in the Apollo manned lunar landing program. The MTF, also a branch of the Marshall Center, is the site for ground-testing first and second stages of the Saturn V space vehicle.

Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

January 12, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Maurice Parker - residence)

Release No. 68-6

MARSHALL SPACE FLIGHT CENTER, Ala. -- More than 150 engineers and technicians from Huntsville and across the U.S. are expected to attend a seminar on "Second Breakdown In Power Transistors" at the NASA-Marshall Space Flight Center Monday, Jan. 15.

"Second breakdown" is a term relating to the power handling capability of a transistor. It reflects the strength rating of the devices. Transistors, similar to electron tubes, are power conductors for many kinds of electronic instruments and equipment.

The conferees will be welcomed to the Marshall Center's Morris Auditorium at 9 a.m. by Dieter Grau, director of the MSFC Quality and Reliability Assurance Laboratory.

Four papers will be given during the morning session by authorities on second breakdown in transistors and its control. Monday afternoon's session will feature equipment demonstrations by several private industries, and a round-table discussion will close the seminar.

Representatives of industrial and government transistor manufacturers and users have been invited to attend the seminar, including those from all U.S. military services and other NASA Centers.

After the welcoming address by Grau, the seminar will be introduced by John K. Morris, MSFC Quality Lab, coordinator for the meeting. Speakers include Harry A. Schafft, National Bureau of Standards, Washington, D. C.; Edward B. Hakim and B. Reich, U.S. Army Electronics Command, Fort Monmouth, N.J.; M. F. Nowakowski and F. Villella, MSFC Quality Lab; and Morris, who will present the last of the four papers.

The equipment demonstrations will begin at 1:45 p.m. in the lobby of the Marshall Center's Building 4200. Representatives from the Bendix Semiconductor Div., Fairchild Semiconductor Corp., Motorola Semiconductor Corp., Radio Corp. of America, Solitron Devices Inc. and Texas Instrument Co. will demonstrate safe operating areas for transistors and present information on their technology in second breakdown and its control for their transistors.

The round-table discussion, an hour-long program beginning at 4 p.m., will be chaired by Leon C. Hamiter, MSFC Quality Lab.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

January 16, 1968

IMMEDIATE RELEASE

876-0760

Release 68-8

MARSHALL SPACE FLIGHT CENTER, Ala. -- Printed circuit boards are thin, flat, wafer-looking elements inside your radio and television that hold the electronic parts that make the sets work.

Small wires, called leads, stick out each end of the many tiny electronic components and are stuck through holes in the circuit board to hold the components still.

For years practically the only way to bend the leads at the proper angle to fit the holes has been with a pair of pliers. But pliers often do not bend the leads at the same angle, put stress on the leads or damage the components.

A technician at NASA's Marshall Space Flight Center, working with printed circuit boards in guidance equipment for Saturn rockets, solved the problem of risky lead bending.

C. G. Glenn devised a hand tool that holds the component firmly, bends the leads at precise right angles and prevents stress on the lead or component. The plier-like tool has adjustable jaws for bending the leads at any spacing desired to fit circuit boards.

After putting the lead bender to work in the laboratory, there were 10-15% fewer component failures. The gadget won Glenn a patent.

So who else benefits? Practically every member of the electronics industry.

Glenn's lead bender, under special license to a commercial company, will be generally available soon in an adapted, improved bench-mounted form that makes it ideal for assembly line operations. Besides bending the leads, this unit also cuts the excess wire away, leaving the precise size lead needed to mount the components.

According to the Technology Utilization Office at the Marshall Center, the device appears to be the ultimate in lead benders. It is not as costly as current automated benders; it's more efficient; it's more reliable.

For the degree of quality and reliability required in aerospace electronics, the newly available lead bender will meet or exceed NASA's stringent specifications.

Marshall Center Technology Utilization officers predict not only cost savings, but quality and reliability increases for commercial electronics industries where faulty lead bending has been the source of performance problems.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

January 16, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release 68-9

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has awarded the Rocketdyne Division, North American Rockwell Corp., a \$14,796,400 engineering support services contract for H-1 engines.

○ The H-1 engines are used to power the first stage of the Saturn IB launch vehicles.

Under this cost-plus-incentive-fee agreement, Rocketdyne will be responsible for engineering support services for engine manufacturing, testing, delivery, application, reliability and flight performance evaluation from production or purchase of individual components through flight of the engines on launch vehicles.

The major portion of the work will be at Rocketdyne's Canoga Park, Calif. plant. Minor segments will be performed at NASA's Michoud Assembly Facility, where the H-1 engines are installed on the Saturn IB's first stage, and at the Kennedy Space Center's launch complex.

The contract covers the period of July, 1967 through June, 1971.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

January 17, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lahey - residence 883-0976)

Release No. 68-10

MARSHALL SPACE FLIGHT CENTER, Ala. -- The Legion of Merit was presented yesterday to retired Air Force Col. Samuel Yarchin, who formerly served as manager of the S-II stage office at the NASA-Marshall Space Flight Center here.

The presentation was made by Dr. Wernher von Braun, director of the Marshall Center.

The brief ceremony took place at the McDonnell Douglas Aircraft Corp. plant in Huntington Beach, Calif., where Yarchin is now employed.

Yarchin retired from the Air Force Oct. 31. He served his last three years with the National Aeronautics and Space Administration through a special agreement with the Department of Defense.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

January 29, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-16

MARSHALL SPACE FLIGHT CENTER, Ala. -- Lee B. James, who has served for the past year as deputy director of the Apollo program in the Office of Manned Space Flight, NASA Headquarters, has returned to the Marshall Center's Industrial Operations as deputy director for special activities.

Before his Washington assignment, James was manager of the Saturn I and IB programs here.

The announcement was made by Brig. Gen. Edmund F. O'Connor, director of Industrial Operations.

During his tenure in Washington, James became heavily involved in the technical direction to the Apollo spacecraft and Saturn vehicle projects.

He was involved in the Headquarters level Apollo management when the nation's first Apollo/Saturn V was successfully launched Nov. 9. While in Washington, James worked for Maj. Gen. Samuel Phillips, NASA's Apollo program director.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

February 2, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-23

MARSHALL SPACE FLIGHT CENTER, Ala. -- A second stage destined to fly as part of the fifth Apollo/Saturn V rocket departed today from Seal Beach, Calif., enroute to the NASA-Marshall Space Flight Center's Mississippi Test Facility.

The one million pound thrust rocket stage, built by North American Rockwell Corp., will undergo static testing before shipment to the Kennedy Space Center, Fla., launch site.

Also aboard the ocean-going vessel Point Barrow, on a trial basis, is an F-1 rocket engine, bound for the NASA-Michoud Assembly Facility in New Orleans where F-1's are installed on the Saturn V booster.

F-1's may be shipped in this way routinely in the future, saving up to \$6,000 over the cost of moving the 10-ton engine across the country by truck, which is the present practice.

When the Point Barrow reaches the Michoud Assembly Facility in New Orleans about Feb. 17, the engine will be unloaded for inspection at the Michoud plant. The second stage will be transferred to a barge and carried on to the Mississippi facility to undergo preparations for a static test.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

February 7, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-28

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has added a \$3,226,374 supplement to the Boeing Co.'s Saturn V systems engineering and integration contract.

The contract extension is effective through December 1969.

Under this contract Boeing is responsible for providing NASA with Saturn V propulsion systems pre-flight and post-flight performance analysis for the first 10 Saturn V launch vehicles. Boeing will study all of the propulsion systems data recorded during the vehicles' test firing and launches for a complete analysis of Saturn V propulsion systems performance.

All of the work will be conducted at Boeing facilities at Huntsville, Ala.

This extension brings the systems engineering and integration portion of Boeing's three part Saturn V contract to a total of \$194,845,024.

Under separate agreements, Boeing is also responsible for Saturn V booster production at the Marshall Center's Michoud Assembly Facility, New Orleans, La. and launch support services at the Kennedy Space Center, Fla.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

February 13, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-29

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has awarded the Boeing Co., a \$3,064,946 contract for continued pre-launch systems analysis and integration for the first manned Apollo/Saturn V launch vehicle.

A similar, less detailed analysis, was performed by the Boeing Co., on the first unmanned Saturn V flight, Apollo/Saturn 501.

The agreement is effective through September 1968 as a part of Boeing's Saturn V systems integration contract with NASA.

The work will be performed by the company's space division in Huntsville, Ala.

Boeing will be responsible for analyzing Saturn V pre-launch activities and, by means of a digital computer simulation program, predicting the probability of successful accomplishment of these activities. The simulation program is also used to pinpoint equipment most likely to prevent pre-launch activity success. All of the compiled data will be used as planning references for subsequent Saturn V pre-launch activities.

Boeing is also responsible for devising an optimum sequence-of-events for recycling launch preparations for alternative launch windows should the primary window be missed.

This cost-plus-incentive-fee agreement brings Boeing's Saturn V systems integration contract to a total value of \$200,080,467.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

February 20, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-30

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has requested quotations from the aerospace industry for manufacturing a star tracker for use on the Apollo Telescope Mount solar observatory.

Bids are due at the Center on April 2.

This is a re-issue of the request for quotations, cancelled last year due to budget and program changes.

The contractor receiving the award will be asked to build one prototype and five flight model star trackers.

One flight model will be used for the ATM mission and another will serve as the backup system. Three remaining devices will be used for qualification testing, system checkout at the Marshall Center and system checkout at a wind tunnel facility.

The star tracker seeks and locates a target star needed for guidance of the solar observatory. A special gimbal system having a freedom of plus or minus 80 degrees provides information needed for ATM roll reference. The star Canopus is proposed as the target star.

The star tracker concept is not new, although this particular device will be designed to be operated by an astronaut or automatically. Automatic star trackers have been flown on several missiles and spacecraft.

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Public Affairs Office
George C. Marshall Space Flight Center
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Marshall Space Flight Center, Alabama

February 23, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Maurice Parker - residence 859-0121)

Release No. 68-32

MARSHALL SPACE FLIGHT CENTER, Ala. -- Dr. Erwin W. Muller, research professor of physics at Pennsylvania State University, will speak on "Advances in Field Microscopy" at the next Space Science Seminar, Feb. 27, at the Marshall Space Flight Center.

The seminar, one of a regular series of scientific programs sponsored by MSFC, will begin at 10 a.m. in Morris Auditorium. A question-and-answer period will begin at 11:30 a.m.

Dr. Muller holds two doctorates from the Technical University of Berlin. After ten years as an industrial research physicist, he became a division chief at the Max-Planck Institute and a professor of physics at the Free University of West Berlin. He joined the faculty of Pennsylvania State University in 1952.

He is a member of the American Physics Society and several other professional societies. His research in surface physics, field emission and field ionization has resulted in more than 130 publications. He is internationally known for his invention of the field ion microscope.

Government and contractor personnel are invited to attend the seminar, particularly those people interested in space science, metallurgy, materials analysis and other fields related to microscopy.

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Public Affairs Office
George C. Marshall Space Flight Center
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Marshall Space Flight Center, Alabama

February 23, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-33

MARSHALL SPACE FLIGHT CENTER, Ala. -- Brig. Gen. Edmund F. O'Connor, director of the NASA-Marshall Space Flight Center's Industrial Operations, has been nominated by President Lyndon Johnson for promotion to major general. The nomination must be approved by the Senate.

Gen. O'Connor is an Air Force officer assigned to the National Aeronautics and Space Administration through a special personnel exchange arrangement with the Department of Defense.

Since 1964, he has been responsible for the technical and administrative management of both Saturn IB and Saturn V launch vehicle programs and the Apollo Applications Programs.

His management responsibility includes the total design, development, manufacture, checkout, test and delivery for launching of the Saturn vehicles.

He directs a vast industrial effort in connection with the Saturn programs and is responsible for the direction and management of the two government-owned, contractor-operated field installations of the Marshall Center -- the Michoud Assembly Facility in New Orleans and the Mississippi Test Facility in Hancock County, Miss.

A native of Fitchburg, Mass., Gen. O'Connor was commissioned in the Army upon graduation from the U.S. Military Academy at West Point in 1943. He attended a number of other military schools during his 28 year career. He became a part of the Air Force when it was established as a separate service in 1947.

A command pilot on flying status, Gen. O'Connor served in Italy in World War II, in Japan, and in the Korean conflict.

He is married to the former Rita Hogan of Highland Falls, N.Y. They have four children, William, Patricia, Michael and Terence.

Public Affairs Office
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February 26, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-34

MARSHALL SPACE FLIGHT CENTER, Ala. -- A 32-year-old engineer, Richard S. (Scott) Hamner, has been appointed manager of the NASA-Marshall Space Flight Center's Flight Control Office in Houston, Tex., effective this week.

Hamner replaces Robert Wolf, who has been acting manager of the MSFC office at the NASA-Manned Spacecraft Center for several months.

The appointment was made by Dr. F. A. Speer, manager of the MSFC Mission Operations Office, who also directs the MSFC office at MSC. The Flight Control Office has responsibility for operational control of MSFC-managed Saturn launch vehicles in flight.

A native of Greenville, Miss., Hamner has been serving as a propulsion subsystem manager in the S-IVB stage office for the past four years.

He was graduated from Marion Institute in Marion, Ala., in 1953 and from the United States Military Academy at West Point, N.Y., in 1957. Later he served in the Air Force and was released as a captain.

Hamner was a technical assistant at the Army Missile Command for three years prior to joining the Marshall Center.

Mrs. Hamner is the former Gail Lanier of Hickory, N.C. The couple has two children, Richard, 9, and Ronald, 8.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama 35812

445
March 13, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-40

MARSHALL SPACE FLIGHT CENTER, Ala. -- All three static test stands at the NASA-Marshall Space Flight Center's Mississippi Test Facility today are filled with Apollo/Saturn V flight stages for the first time.

Two of the stands contain second stages for the fourth and fifth Apollo/Saturn V rockets.

A third is holding the 7.5 million pound thrust booster that will lift the sixth Apollo/Saturn V off the NASA-Kennedy Space Center, Fla., launch pad.

Both the booster and the second stage for the fifth Saturn V are scheduled for static testing in late April.

The other second stage has been static tested successfully and is due to undergo a cryogenic proof pressure test this month which will simulate maximum flight loads. The test is designed to assure high reliability of the new lightweight and more powerful second stages and is scheduled for all proposed manned Saturn V vehicle second stages.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

March 12, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-41

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has awarded the Chrysler Corp. a contract modification totalling \$5,779,884 for ground support and engineering equipment related to the Saturn IB program.

The contract, awarded by the NASA-Marshall Space Flight Center, covers Chrysler services at Huntsville through December, 1968. It is a cost-plus-fixed-fee agreement.

Chrysler's assignment covers program integration management, test integration and engineering of ground support equipment, operation of the Saturn IB Development (Breadboard) Facility, logistics responsibility and telemetry systems engineering.

Chrysler's contract for ground support and engineering equipment now totals \$14,701,868.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

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March 14, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-43

MARSHALL SPACE FLIGHT CENTER, Ala. -- Lockheed Aircraft Corp. of Marietta, Ga. will conduct a study on space radiation in the Apollo Telescope Mount and Saturn I Workshop under terms of a new contract issued here.

Awarded by the Marshall Space Flight Center, the nine month study will cost \$49,985.

The main object of the study is to assess possible radiation damage to film used aboard the ATM to record solar activity. Secondly the firm will consider radiation hazards to astronauts manning the spacecraft.

The workshop and the ATM are parts of NASA's Apollo Applications Program, an effort to make further use of the hardware and extend the knowledge gained in the mainstream Apollo lunar landing program.

The possibility of film being blemished by radiation is well known, but the proposed long stay times in orbit -- 28 and 56 day stretches -- increases this possibility considerably.

Radiation affects unprotected film in a manner similar to the effect of X-rays on film in hospitals and medical facilities.

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Film to be exposed by astronauts using the Apollo Telescope Mount in earth orbit, and while conducting other experiments using the workshop, must be protected from radiation before use. Otherwise, radiation could cause spots on the film to be used in photographing the solar system.

Lockheed will calculate the radiation dose rate exposures for all key film locations in the ATM and other locations in the workshop cluster. The firm will also calculate radiation doses at key positions inside the workshop and lunar module but not in as great a detail as for the ATM.

The structure of the ATM and workshop and the equipment inside provide a certain amount of radiation protection. The study is to determine if that protection is sufficient and, if not, how to increase the protection.

Terms of the contract call for Lockheed to make available to the National Aeronautics and Space Administration the computer cards or tapes which describe the vehicle geometries used in the calculations, along with any other instructions not previously furnished to NASA.

The contract also provides for a NASA employee to work closely with Lockheed scientists during the calculations. This will require one NASA employee to spend up to one month at the Lockheed facilities to learn how to prepare the computer inputs and run the complex geometry family of codes.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

March 18, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Maurice Parker - residence 859-0121)

Release No. 68-44

MARSHALL SPACE FLIGHT CENTER, Ala. -- Sixteen outstanding high school science students from a four-state area will be in Huntsville March 20-22 to attend a Youth Science Congress at the Marshall Center.

Sponsored by the National Aeronautics and Space Administration and the National Science Teachers Association, the Congress is one of 12 being held throughout the U.S. The coordinator of the local congress is Mrs. Mary G. Burke, Huntsville High School physiology teacher.

During the two-day meeting, the 16 students and invited guests will hear astronaut Edgar D. Mitchell speak at a luncheon meeting Wednesday, March 20, at the Sheraton Motor Inn. While in Huntsville, Mitchell will also speak to the student bodies at Huntsville High School and Alabama A&M College.

The students won their all-expense paid trips to the Youth Science Congress after submitting outstanding papers describing scientific projects on which they are working. Three of the students are from Alabama, six from Tennessee, four from Florida and three from Louisiana.

The Congress will give the students an opportunity to present the papers on their science projects before experienced evaluators, and visit the Marshall Center and some of its laboratories. Informal discussions will be a part of the Congress, giving the students a chance to talk to MSFC scientists and engineers.

The Congress will end Friday morning, March 22.

The Alabama students are: Wayne S. Casey, Decatur High School; Bracie Watson, Parker High School, Birmingham; and Andrea J. Yates, Austin High School, also in Decatur.

The Tennessee students are: John E. Erpenbach, Notre Dame High School, Chattanooga; Daryl R. Wright, Putnam County High School, Cookeville; Barbara E. Turri and Mary P. Welsh, both of Sacred Heart High School, Memphis; Fred H. Richter, McMinn County High School, Athens; and Gregory L. Rhyne, Gibbs High School, Corryton.

Louisiana students are: Carolyn S. Adams, Houma Junior High School; Rondal B. Crum, Central High School, Baton Rouge; and Robert A. Warriner, Mid-City Baptist High School, New Orleans.

Florida students are: Bruce A. Amato, Spranahan High School, Ft. Lauderdale; Earl T. Billingsly, Leon High School, Tallahassee; Robert J. Cammack, Merritt Island High School; and Margaret M. Gray, St. Paul's High School, St. Petersburg.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

March 18, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-45

MARSHALL SPACE FLIGHT CENTER, Ala. -- More than 100 engineers and scientists will participate in a two-day Saturn I workshop design review board meeting March 19 and 20 at the NASA-Marshall Space Flight Center.

The engineers will discuss results of previous workshop reviews including the original engineering design review in May of 1967, a documentation study in December and a week-long crew station review Feb. 12-16 at the Marshall Center.

Meeting participants will represent the Manned Spacecraft Center, Kennedy Space Center, NASA Headquarters and the McDonnell Douglas Corp., manufacturer of the Saturn S-IVB stage.

The space agency plans to launch a modified Saturn S-IVB stage into space where it will be converted to a living-work area for long stays in space. A workshop mockup has been used at the Marshall Center for earlier design work.

The chairman of the design review board is Leland Belew, manager of Marshall's Saturn/Apollo Applications Office.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

March 19, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Maurice Parker - residence 859-0121)

Release No. 68-47

MARSHALL SPACE FLIGHT CENTER, Ala. -- The American Meteorological Society has accepted several papers written by NASA-Marshall Space Flight Center employees for presentation at the third National Conference on Aerospace Meteorology in New Orleans May 6-9. The papers are based on atmospheric environment studies conducted by and for the Center's Aero-Astrodynamic Laboratory.

The authors and their papers are:

Orvel E. Smith, "Atmospheric Statistics for Aerospace Vehicle Design, Mission Planning and Operations"; Dennis W. Camp (co-author), "High Resolution Jimsphere Temperature Sensor"; J. W. Kaufman (co-author), "Wind Tower Influence Study for NASA's 150 Meter Meteorological Tower at the Kennedy Space Center, Fla."

George H. Fichtl, "Characteristics of Turbulence Observed at the NASA 150 Meter Meteorological Tower"; R. R. Jayroe (co-author), "Optimum Averaging Times of Meteorological Data with Time Dependent Means"; E. F. Fleischman Jr. and P. W. Revels, "The Influence Factors in Satellite Orbital Decay and Lifetime Analysis."

Robert S. Ryan (co-author), "Dynamic Loads of Launch Vehicle Due to Various Characteristics of Inflight Winds"; S. C. Brown (one of five authors), "Scale Effects in Use of Cloud Statistics for Earth Oriented Space Experiments"; William T. Roberts, "Ionospheric Electron Density and Temperature Variations During a Day in January."

William W. Vaughan, a member of the AMS Committee on Problems of Aerospace Vehicles, is chairman of the Conference's program committee.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

April 1, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-57

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has awarded a \$2,056,360 contract modification to the Radio Corporation of America for continued support of the space agency's RCA 110A computers.

These computers are used in the checkout and launch of Saturn IB and Saturn V launch vehicles. RCA 110A computers are located at several sites including the Marshall Center, the NASA-Kennedy Space Center, Fla., and the NASA-Michoud Assembly Facility in New Orleans, La.

The work will include logistics, repair services, engineering support, reliability reporting and analysis, configuration management, field technical support and spare parts.

This change brings the total value of the contract to \$12,659,761.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

April 1, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-58

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has signed a follow-on contract with Sanders Associates, Inc., of Nashua and Manchester, N. H., to provide logistics and engineering support to Saturn V operational display systems at the Marshall Space Flight Center in Huntsville, Ala.

Amount of the award is \$1,750,000. The work is to be performed through the end of September, 1968.

This display system is associated with the computer used to checkout Saturn vehicles in preparation for firing.

Services under the award include sustained engineering, field technical support, spare parts, repair service, configuration management, documentation and quality and reliability assurance.

With this modification, the total value of the contract with Sanders is \$3,899,548.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

April 3, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-63

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has signed a supplemental agreement in the amount of \$1,303,758 for spare parts and logistic support of the instrument units that guide both Saturn IB and Saturn V rockets.

The contract is between the NASA-Marshall Space Flight Center in Huntsville, Ala., and the International Business Machines Corp., Space Guidance Center in Huntsville, Ala.

The spare parts will support units that will fly on subsequent Saturns to be launched from the NASA-Kennedy Space Center in Florida.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

FOR RELEASE:

2 p.m., April 4, 1968

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-64

MARSHALL SPACE FLIGHT CENTER, Ala. -- The Radio Corporation of America has been awarded a contract for \$1,293,640 calling for modifications to RCA 110 computer module boards.

The work, to be performed at Huntsville, Ala., involves an improved solder design being systematically incorporated in module boards over a period of time.

The new system is being placed in effect because certain earlier solder joints showed signs of cracking after prolonged use.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

FOR RELEASE:

2 p. m. , April 4, 1968

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-65

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued a supplemental agreement to the International Business Machines Corp., in Huntsville to cover certain Apollo/Saturn configuration management requirements.

The agreement, in the amount of \$1,523,282, calls for adjustment and implementation of configuration management in connection with the fabrication, assembly, checkout and delivery of 27 instrument unit stages for Apollo/Saturn vehicles along with other support equipment.

IBM builds instrument units which guide both Saturn IB and Saturn V rockets in flight.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

FOR RELEASE:

2 p.m., April 4, 1968

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-66

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center today extended a contract with Air Products and Chemicals, Inc., of Allentown, Pa., to supply about 12 million pounds of liquid hydrogen between now and next March 31. Cost is expected to be \$2,249,364.

The supercold liquid will be supplied to all National Aeronautics and Space Administration, Department of Defense and Atomic Energy Commission users east of the Rocky Mountains.

The Marshall Center, also a heavy user of the minus 423 degree propellant at the Mississippi Test Facility, is the purchasing agent for government agencies and their supporting contractors in the Eastern United States. This also includes the NASA-Kennedy Space Center, Fla., launch complex which is expected to use an enormous amount of liquid hydrogen in the top stages of both the Saturn IB's and Saturn V's scheduled for launch during the contract period.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

FOR RELEASE:

2 p.m., April 4, 1968

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-67

MARSHALL SPACE FLIGHT CENTER, Ala. -- Three aerospace firms have received contract renewals totaling an estimated \$17.2 million for support services at the NASA-Marshall Space Flight Center.

Receiving one year extensions were Brown Engineering Co., Huntsville; SPACO, Inc., Huntsville; and Hayes International, Birmingham. These extensions run through March 31, 1969.

Largest of the three went to Brown for \$10.5 million. The firm will provide support services in the Marshall Center's Propulsion and Vehicle Engineering Laboratory including conceptual and preliminary design studies, vehicle systems engineering, structural research and development, propulsion and mechanical systems research and development, engineering documentation, and systems, subsystems and component testing.

SPACO's contract is for \$4,504,000 for supporting Marshall's Quality and Reliability Assurance Laboratory including maintenance and installation of electrical equipment, stage and ground support checkout station schematics, checkout of data acquisition and instrumentation, quality engineering analysis evaluation, and calibration and environmental testing.

MORE

Hayes International will receive \$2,273,000 for work in the Manufacturing Engineering Laboratory including tool modification and maintenance, manufacturing and reliability assessment, engineering processing, engineering tool design, plant engineering and manufacturing development research.

These are three of eleven contracts providing support services to Marshall. The original contracts were effective in April of 1965 and this is the exercise of the third option by the government under the contract.

The decision to extend these contracts was made after discussions with the Civil Service Commission. These contracts may be among those to be reviewed jointly by the NASA and the Civil Service Commission.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

April 12, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joseph M. Jones - 852-8847)

Release No. 68-75

MARSHALL SPACE FLIGHT CENTER, Ala. -- Proposals for developing a star tracker and a digital computer for the Apollo Telescope Mount solar observatory are being evaluated by the NASA-Marshall Space Flight Center.

Three firms submitted proposals on the star tracker. They are Kollsman Instrument Corp., Electro-Optics Division, Syosset, N.J.; Bendix Corp., Navigation and Control Division, Teterboro, N.J.; and Honeywell, Inc., Radiation Center, Boston, Mass.

The star tracker seeks and locates a target star needed for guidance of the ATM solar observatory. The star Canopus is proposed as the target star. The winning contractor will build one prototype and five flight model star trackers.

Six firms submitted proposals for developing ATM digital computers, flight programs and associated checkout equipment. They are International Business Machines Corp., Federal Systems Division, Huntsville, Ala.; Litton Industries, Guidance and Control Systems Division, Woodland Hills, Calif.; Raytheon Co., Space and Information Systems Division, Sudbury, Mass.; Sperry Rand Corp., Univac Division, St. Paul, Minn.; Teledyne Systems, Inc., Northridge, Calif.; and General Precision, Inc., Kearfott Division, San Marcos, Calif.

MORE

The Marshall Center is developing the Apollo Telescope Mount as one of the manned missions in the Apollo Applications Program. AAP flights are expected to begin in 1970 and the manned solar observatory is scheduled to fly in 1971.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

✓
April 16, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-76

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has issued a contract to Ball Brothers Research Corp. for six solar sensor systems to be used in the Apollo Applications Program.

Ball Brothers, of Boulder Colo., will produce one prototype and five flight units to be used on the Apollo Telescope Mount currently under development at the NASA-Marshall Space Flight Center.

The sensors will be part of the pointing control system of the ATM. The sensors will initially acquire the sun and furnish signals to turn the spacecraft so its precision solar telescopes will have a full view of the sun.

The sensors, only about two inches in dimensions, will weigh about one and one-half pounds each. The first is to be delivered in about six months followed by one a month until all have been delivered.

The solar sensor systems are being built for the MSFC Astrionics Laboratory at the Marshall Center under the \$134,500 contract.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

✓ April 14, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-77

MARSHALL SPACE FLIGHT CENTER, Ala. -- A technical review of Saturn launch vehicles will be held at the NASA-Marshall Space Flight Center this weekend.

An estimated 140 scientists, engineers and administrators are expected to participate in the review. Several high level officials of the National Aeronautics and Space Administration, including Dr. George E. Mueller, NASA associate administrator for manned space flight, and Maj. Gen. Samuel C. Phillips, Apollo program director in Mueller's office, will be present.

Top management people and laboratory directors of the Marshall Center will also participate, along with representatives of major industrial contractors.

The purpose of the meeting, to be held Saturday and Sunday, will be to review the status of the Saturn launch vehicles and to make recommendations concerning maintaining the current flight schedule.

The review will be held at MSFC's Huntsville Operations Support Center, Computation Laboratory and Propulsion and Vehicle Engineering Laboratory.

MORE

Joining Dr. Mueller and Gen. Phillips will be Dr. Wernher von Braun, MSFC director, and his deputies, Harry H. Gorman and Eberhard F. M. Rees; Dr. Robert Gilruth, director of the Manned Spacecraft Center, Houston, Tex.; Dr. Kurt Debus, director of the Kennedy Space Center in Florida, and other officials from MSC, KSC and Headquarters.

Other Marshall participants will include the directors of Industrial Operations and Research and Development Operations, Brig. Gen. E. F. O'Connor and H. K. Weidner.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

7 10 S
April 17, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-78

MARSHALL SPACE FLIGHT CENTER, Ala. -- Some advanced instrumentation subsystems, initially developed for space use, and commercial electronics have been combined into a system that may help doctors and nurses keep a watchful eye on their patients by remote control.

The Boeing Company demonstrated an automated patient care system recently at NASA's Marshall Space Flight Center.

The company is under contract to the MSFC to assist in devising such a system for possible use within NASA and the medical profession. An extensive survey by three NASA bio-medical teams showed a lack of mass patient monitoring systems and prompted this project, which is a bonus derived from mainstream rocketry work.

The monitoring system can measure any six physiological parameters on each of 64 patients every two minutes. During the recent demonstration it recorded three electro-cardiograms, two temperatures and one blood pressure reading.

The patient need only wear a nine-ounce monitor strapped to his wrist and connected to his arm and chest by leads. The monitor is powered by a packet of regular hearing aid batteries. The central control is about the size of a large console stereo unit.

A patient's condition is beamed by radio signal to a centrally-located station and there displayed graphically on an oscilloscope and also recorded on tape printout for day-to-day progress comparisons.

With this arrangement a physician can observe one or all six medical indexes on one or all 64 patients. He can even designate physiological danger points for each patient and a built-in alarm system is activated if any subject exceeds his individual danger points.

Three Marshall Center offices, Technology Utilization, Experiments Office and Operations Management, coordinated the project with the assistance of the Center's industrial/medical facility.

"The monitoring system is little more than a packaging of rocket telemetry gear and ordinary computer, recording and transmitting/receiving systems," said Peter Petroff, Experiments Office, MSFC.

"There are other patient-care devices," he said, "but they can only observe one individual at a time and he must be physically wired to a nearby control center if more than one measurement is being recorded. That's what makes this remote idea more attractive."

The system has extensive applications in intensive-care hospital wards, especially in observing post-operative and cardiac patients.

In the Marshall Center demonstration, the device performed well, tracing the body responses of two test subjects as they roamed around an auditorium and behind walls about 50 yards from the control center.

"There is further refinement needed in this system, especially in the packaging of the central control station and in the antenna and RF transmission systems," said James W. Wiggins, MSFC Technology Utilization chief.

"We expect to learn more about this system as a result of preliminary clinical tests about to get underway at Marshall's Medical Services Center."

Wiggins said that full utilization of large scale integration (LSI) technology in the monitoring unit would provide vast cost reductions and an increase in reliability over this prototype system.

He also predicts that use of a full LSI system will further reduce the nine-ounce, cigarette-pack size wrist monitor to a wrist watch-sized unit weighing only about two ounces.

Not limited to the medical field alone, adapted versions of the monitoring system can be used industrially to assay machine operations such as bearing temperatures or vibrations. Just as easily it can be employed in hazardous-area tasks to detect unsafe conditions and register an automated alarm.

"One of the most dramatic applications of this system," Wiggins said, "would be that of monitoring transcontinental or long distance airline flights.

"Rather than monitoring blood pressure, heart condition and temperature of persons, the ground based central control stations could monitor air speed, altitude, headings and other flight conditions.

"In case of trouble, the central control station would go into a continuous monitoring mode for recording all flight events until conclusion of the problem.

"The real significant factor," he pointed out, "is that the pilot could be warned automatically by the limit-alarm capability of the system that something was wrong."

The next few months are full of tests scheduled for the automated patient care system.

"This summer we hope to conduct a symposium at the Marshall Center to demonstrate the feasibility of this remote monitoring system to the medical and industrial communities," said Wiggins.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

April 23, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-82

MARSHALL SPACE FLIGHT CENTER, Ala. -- A space engineer from Decatur, Ala., has been awarded \$1,400 for an invention he developed for the Saturn launch vehicle program.

John A. Hauser, of 2302 Dogwood Lane, was presented the award by Dr. Wernher von Braun, director of the NASA-Marshall Space Flight Center.

Hauser's invention is a system for purifying and filtering large quantities of gas, such as air or helium, to the purity necessary for use in the development of Saturn rockets.

The five-module system in use at MSFC has a flow rate of 1,600 standard cubic feet per minute of gas. This can be reduced or increased by taking out or adding modules. Hauser's system is also used at MSFC's Mississippi Test Facility. Pressure capacity of the system at MSFC is 6,000 pounds per square inch.

Hauser, employed at the MSFC Test Laboratory, undertook the task of developing the system because no such facility was available.

A registered engineer, Hauser received his bachelor of science degree in mechanical engineering from Duke University in 1948. He was a Navy officer during World War II and the Korean conflict. He has been in Civil Service 23 years, the last 12 in the rocketry field.

Patent rights are retained by the National Aeronautics and Space Administration.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

April 23, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Maurice Parker - residence 859-0121)

Release No. 68-83

MARSHALL SPACE FLIGHT CENTER, Ala. -- Paul L. Styles will become chief of the NASA-Marshall Space Flight Center's Manpower Utilization and Administration Office the first week in May.

Presently head of the center's Labor Relations Office, Styles will replace Keith Wible, who is moving to a new position in NASA Headquarters, Washington. Wible has been head of the MSFC office since June, 1965.

Wible's new job will be in the Operations Management Office of the Office of Manned Space Flight (OMSF). His primary responsibility will be to head a new manpower utilization system for OMSF.

This system will combine several programs now in operation into an overall management system.

Styles came to the Marshall Center in 1961 to head the Labor Relations Office. He will continue to head this office, incorporating it into his new position as Manpower chief.

Styles has had many years of experience in the labor, employee and personnel relations fields, both in the government and with private industry. He is a former member of the National Labor Relations Board.

Both men will begin their new jobs shortly after May 1. Wible will not permanently move to Washington until the first week in June, however, allowing several weeks for the changeover.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

April 24, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-85

MARSHALL SPACE FLIGHT CENTER, Ala. -- The eleventh Saturn IB booster was successfully static fired late yesterday at the NASA-Marshall Space Flight Center.

The 1.6 million pound thrust booster ran for approximately 145 seconds, as planned. The test was conducted by the Chrysler Corp. Space Division, maker of the vehicle.

Harry M. Johnstone of the MSFC Test Laboratory said a preliminary look at the test data indicated a successful performance.

The booster will be returned to the Michoud Assembly Facility in New Orleans next month for a post static check.

Meanwhile, another barge is enroute to the Marshall Center at this time with the S-IB-12 booster which will also be static fired here.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

April 29, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-90

MARSHALL SPACE FLIGHT CENTER, Ala. -- A lightweight test article simulating part of the Saturn V second (S-II) stage is scheduled to be put through structural tests beginning in May at the NASA-Marshall Space Flight Center.

Beginning with the S-II scheduled for the fourth Saturn V flight, all second stages will be 3,000 pounds lighter than their forerunners. These flight stages will weigh about 85,000 pounds.

The structural tests, devised by the MSFC Propulsion and Vehicle Engineering Laboratory, are scheduled to begin here in May at the MSFC Test Laboratory. This is one portion of a three-part program to qualify this structure for future Saturn V flights.

This S-II test article contains one large section of the S-II stage which was provided by North American Rockwell Corp. Components of this section includes the liquid oxygen tank and bolting ring, a liquid hydrogen tank skin section and an aft skirt.

The Marshall Center's Manufacturing Engineering Laboratory has completed the assembly of the test article structure by mating the S-II portion to a first (S-IC) stage liquid oxygen tank section and bulkhead. The resulting test article thus has a simulated liquid hydrogen tank, an S-II common bulkhead and liquid oxygen tank. No engine or hot firings will be conducted in the planned structural series.

The test article, which measures 50 feet long and 33 feet in diameter, is now being insulated and instrumented in a hydrostatic test facility before being moved to the test area.

Technicians have mounted more than 4,000 strain gauges and other measuring instruments to the test article. Spray-on foam insulation is now being applied with high pressure guns.

When the S-II test article is moved to the Test Laboratory facility just south of the Saturn V S-IC test stand, it will be loaded with liquid hydrogen and liquid nitrogen replacing liquid oxygen. Load tests will simulate the various flight loading cycles the S-II stage is expected to experience.

Another part of the S-II lightweight structural qualification program is the thrust structure test being conducted in Propulsion and Vehicle Engineering Laboratory. In the thrust structure tests, the loads from the five J-2 engines are simulated to determine the structural integrity of this unit.

A third part, or forward portion of the stage, is being tested with liquid hydrogen at the North American Rockwell's Santa Susana, Calif., test site. Load tests here will also simulate the various flight loading cycles that this part of the S-II stage is expected to experience.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

April 29, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-91

MARSHALL SPACE FLIGHT CENTER, Ala. -- Dr. Wernher von Braun presented medallions Friday (April 26) to 12 NASA-Marshall Space Flight Center employees for their work in the Explorer I program. Two others not present for the ceremony will also receive medallions.

The first such medallion was presented to Dr. von Braun as MSFC director on January 31 at ceremonies in Washington, D. C. The other medallions had not been completed at that time.

The medallions were struck by the George Washington Chapter of the Association of the U.S. Army and by Madison County and the City of Huntsville to honor those participating in development of America's first artificial earth satellite.

Present for the Friday ceremonies and receiving medallions were:

Dr. E. F. M. Rees, deputy director, technical; Erich Neubert, associate deputy director, technical; Hans Maus, director, Executive Staff; Dr. W. A. Mrazek, assistant director for engineering, Industrial Operations; Dr. Ernst Stuhlinger, director, Space Sciences Laboratory; Karl Heimbarg, director, Test Laboratory; Dr. Helmut Hoelzer, director, Computation Laboratory; Dr. Walter Haeussermann, director, Astrionics Laboratory; Herman Beduerftig, Propulsion and Vehicle Engineering Laboratory; Dr. Ernst Geissler, director,

Aero-Astroynamics Laboratory; Robert Lindstrom, now with private industry; and Mrs. Bonnie Holmes, secretary to Dr. von Braun.

Marshall Center recipients not present for the ceremony were Hermann K. Weidner, director, Research and Development Operations, and Josef Boehm, Astrionics Laboratory.

Medallions are also to be presented to Dr. Kurt Debus and Robert E. Moser of the NASA-Kennedy Space Center and to Robert Cuthill, now employed by an aerospace firm in Florida.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

April 30, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

J Release No. 68-93

MARSHALL SPACE FLIGHT CENTER, Ala. -- The second stage of what is likely to be the first manned Apollo/Saturn V space vehicle is being shipped from the NASA-Kennedy Space Center, Fla., launch site Wednesday (May 1) to the NASA-Marshall Space Flight Center's Mississippi Test Facility for a special test.

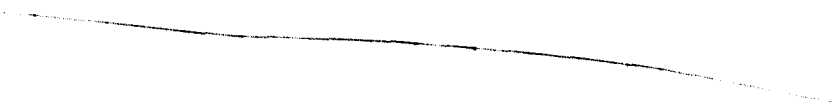
The one million pound thrust stage is due to arrive at MTF May 6 and undergo a cryogenic proof pressure test by personnel from the North American Rockwell Corp., manufacturer of the stage.

The test is scheduled in June. The stage will be shipped back to the Kennedy Space Center about July 1.

Purpose of the test, which is scheduled for all second stages destined for manned Apollo/Saturn V missions, is to further certify the integrity of the stage's liquid hydrogen tank.

The barge Orion is transporting the stage between the MTF and the KSC.

The stage was already "stacked" in the three stage Apollo/Saturn V, ready for another unmanned research and development flight when a decision was made to proceed with astronauts aboard the next Saturn V flight.



At the Mississippi Test Facility, engineers will fill the stage with super cold liquid hydrogen and pressurize the tank just above maximum flight pressures. Liquid nitrogen will be used to fill the liquid oxygen tank during the test.

Under the recently initiated cryogenic proof test program, one stage (S-II-4) has successfully passed the test. Another, (S-II-5) was undergoing a similar test this week.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

✓
May 6, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-95

MARSHALL SPACE FLIGHT CENTER, Ala. -- Two boosters were delivered to the NASA-Marshall Space Flight Center during the weekend and a second stage for the third Apollo/Saturn V was unloaded at the NASA-Mississippi Test Facility.

The twelfth Saturn IB booster was delivered to the Marshall Center aboard the barge Palaemon for static testing. As a part of the same shipment from the NASA-Michoud Assembly Facility, New Orleans, was a Saturn V dynamic booster aboard the barge Poseidon.

The Saturn V booster will be located in Test Laboratory in case it is needed for further dynamic tests in support of the Apollo/Saturn V flight program.

The middle stage for the third Apollo/Saturn V will undergo a cryogenic proof pressure test at the Mississippi Test Facility next month.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 10, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-100

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has contracted with A. L. Mechling Inc., of Joliet, Ill., to provide barge towing service on the Tennessee, Mississippi and Ohio rivers, and the Gulf of Mexico and Atlantic intercoastal waterways under the terms of a contract awarded May 1.

The contract, amounting to \$556,416, is for a year.

Mechling tug boats will provide the power for several NASA-Marshall Space Flight Center barges that ply the inland and Gulf waterways regularly with huge space rocket stages in the cargo hatches.

Mechling has been providing the tow service to Marshall since 1961.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

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HOLD FOR RELEASE:

2 p.m. CDT, May 10, 1968

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-101

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has renewed a Brown Engineering Co. contract for support services work in the Center's Space Sciences Laboratory.

Estimated cost of the one-year contract extension is \$1,007,000.

Work under the contract will be performed at the Space Sciences Laboratory and at the Brown Engineering Co. facility in Huntsville. Brown personnel will aid in experiments research activities supporting the laboratory's scientific investigations.

Engineering and scientific tasks to be carried out under the contract are in the fields of thermal physics, lunar and planetary physics, radiation and plasma physics, meteoroid physics, scientific experiments and instruments, and space exploration missions.

The contract is scheduled to run through May 2, 1969. This is the third renewal of the contract awarded in 1965.

Brown also provides support services to the Marshall Center's Propulsion and Vehicle Engineering Laboratory.

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5/10/68

Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 13, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

✓ Release No. 68-102

MARSHALL SPACE FLIGHT CENTER, Ala. -- Dr. Walter Haeussermann, director of the Astrionics Laboratory at the NASA-Marshall Space Flight Center, has been selected to Fellowship in the American Astronautical Society.

Dr. Haeussermann was notified at the Marshall Center of his unanimous selection by the board of directors of AAS.

The Fellowship presentation will be made at the Annual Awards Banquet of the AAS which begins at 7 p.m. Tuesday, May 14. The banquet is part of the 14th Annual Meeting of the AAS at Hotel 128 in Dedham, Mass.

Fellowship in the society was bestowed upon Dr. Haeussermann because he has, in the eyes of the Society, "made a direct and significant contribution to the field of astronautics."

The laboratory directed by Dr. Haeussermann is responsible for navigation, guidance and control equipment, communications, telemetry and other electronic equipment used in Saturn launch vehicles and other related projects, such as the Saturn I Workshop and Apollo Telescope Mount.

The theme for the 14th Annual Meeting of the AAS, which runs May 13-15, will be "Exploitation of Space for Experimental Research."

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 13, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-103

MARSHALL SPACE FLIGHT CENTER, Ala. -- Solar flare prediction techniques and the ground observatory support needed for the space agency's Apollo Telescope Mount mission are being studied by the Environmental Sciences and Services Administration.

The National Aeronautics and Space Administration plans to launch its first Apollo Telescope Mount -- a manned orbiting solar observatory -- in 1971 to study the sun with instruments developed by the country's leading solar scientists.

ESSA Research Laboratories, Boulder, Colo., has been asked by the space agency to start developing techniques for predicting solar flares to enable future scientist-astronauts to point their telescopes accurately. The astronauts will need to know when and where a solar flare will next occur within an accuracy of less than 1,000 miles out of the 860,000-mile wide face of the sun.

The space agency recently assigned ESSA \$30,000 for a six month investigation. This work is being closely monitored by the MSFC ATM project office and the ATM experiment scientists in the MSFC Space Sciences Lab.

ATM will carry solar telescopes and other solar measuring instruments developed by five principal investigators. In orbit, the instruments will be operated by the astronauts. Because of greater resources available to them, the ground based scientists can redirect the orbital observation program based on ground information or descriptions from the scientifically trained crew.

ESSA will study the type of information the principal investigators will need to achieve maximum results from the ATM mission and facilities available for gathering this information.

There are several programs jointly supported by ESSA, NASA and the Air Weather Service of the United States Air Force, which warn of solar events and forecast space/solar conditions for the common support of space missions, the communications industry, and the soon-to-be-flying supersonic transports. Patrol stations are strung around the world. These stations continuously monitor the sun during daylight hours and report their observations directly to ESSA's Space Disturbance Forecast Center in Boulder.

To make useful forecast of flare occurrence times and positions on the sun, the ESSA scientists must first make a careful examination of the capacity of these existing data collection networks and their observing procedures. ESSA will then concentrate on developing procedures for anticipating which of a number of active regions on the sun are likely to flare within a given time period and where within the active region the flare is likely to occur.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 13, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-104

MARSHALL SPACE FLIGHT CENTER, Ala. -- Another Saturn V second stage (S-II-4) is enroute to the launch site at the NASA-Kennedy Space Center, Fla., having departed the NASA-Mississippi Test Facility Saturday (May 11).

The stage is scheduled to reach the Florida center May 15. It is on the barge Orion.

This stage is slightly lighter in weight than previous S-II's -- about 3,000 pounds.

It has been ground tested at the Mississippi facility, a part of the Marshall Space Flight Center, by its maker, the North American Rockwell Corporation's Space Division.

Two other barges left the Marshall Center at Huntsville in a single tow Saturday. The Palaemon is transporting a Saturn IB stage (S-IB-11) back to the NASA-Michoud Assembly Facility following the Chrysler Corporation's static firing of the stage here. A Saturn V booster (S-IC) transporter and other equipment is aboard the barge Poseidon, being returned to Michoud.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 14, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-105

MARSHALL SPACE FLIGHT CENTER, Ala. -- The leaders of the National Aeronautics and Space Administration's manned space flight program are meeting at the Marshall Space Flight Center today to certify the readiness of the Apollo/Saturn IB vehicle for its next mission -- a manned flight set later this year.

Those in attendance include three top officials from the Office of Manned Space Flight, Washington: Dr. George E. Mueller, director of manned space flight; Maj. Gen. Sam Phillips, Apollo program director; and George Hage, assistant Apollo director.

The directors of the other two manned space flight centers, Dr. Robert Gilruth of the Manned Spacecraft Center and Dr. Kurt Debus of the Kennedy Space Center, are also present.

Principal MSFC hosts for the session are Dr. Wernher von Braun, director; Brig. Gen. E. F. O'Connor, director of Industrial Operations; and Bill Teir, manager of the Saturn IB program.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 14, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-107

MARSHALL SPACE FLIGHT CENTER, Ala. -- Controls and displays for the space agency's first Apollo Telescope Mount or manned orbiting solar observatory will be discussed at a one-day design review Thursday (May 16) at the NASA-Marshall Space Flight Center.

Approximately 80 Marshall Center, industry and other government engineers are scheduled to attend the meeting. Purpose of the review, being held in preparation for a full scale ATM preliminary design review, is to reach agreement on controls and displays for operating ATM experiments and subsystems.

The Marshall Center is responsible for design of controls and displays for the manned solar observatory. Scheduled for launch in 1971 by a Saturn IB launch vehicle, the ATM will carry solar measuring telescopes and instruments developed by five principal investigators. These instruments will allow astronauts to monitor and photograph the sun's activity outside the earth's atmosphere.

MSFC's ATM Project Office in Industrial Operations and Astrioncs Laboratory, lead laboratory for the project, are conducting the review.

Design review participants will be from the Manned Spacecraft Center in Houston; NASA Headquarters in Washington; Martin Co. in Denver; Bendix Corp.; and the Marshall Center.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 15, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Maurice Parker - residence 859-0121)

Release No. 68-108

MARSHALL SPACE FLIGHT CENTER, Ala. -- Approximately 90 members of the Tennessee Valley Section, American Society of Civil Engineers, will visit the NASA-Marshall Space Flight Center Thursday, May 16.

The engineers are attending a National Environmental Engineering Conference in Chattanooga, Tenn., May 13-17. They are making the trip to Huntsville specifically to visit the Marshall Center.

During their tour the group will be briefed on MSFC programs, visit the Manufacturing Engineering and Test Laboratories, and tour the Space Orientation Center.

The visitors will return to Chattanooga Thursday afternoon.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 15, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-109

MARSHALL SPACE FLIGHT CENTER, Ala. -- North American Rockwell Corp. has received a change to its contract for Saturn V (S-II) stage development testing and facility maintenance planning. Value of the work is \$2,574,677.

The firm will continue its S-II "battleship" or ground test program at Santa Susana Test Center, Calif., through July of 1968 under the change to the existing contract.

North American, manufacturer of the S-II stage, tests the heavy non-flight battleship stage to determine the validity of stage and engine changes. This portion of the contract modification amounts to about \$2.5 million.

North American is also developing a plan for maintenance and repair of facilities used for testing S-II flight stages at the Marshall Center's Mississippi Test Facility in Hancock County, Miss. Flight stages are assembled at Seal Beach, Calif., and shipped to the test site for acceptance tests. After static test and checkout, they are then barged to the NASA-Kennedy Space Center, Fla., test site.

This contract modification brings the North American S-II contract to a total of \$1,280,559,436.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 22, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence - 852-8847)

Release No. 68-112

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has awarded a \$6,448,000 extension to a contract held by RCA Services Co., Camden, N.J., for institutional support services at the Huntsville space center.

RCA provides services for the Marshall Center's Management Services Office. The company's personnel work in communications engineering, operate the MSFC occupational medical facility, and provide security guard service.

Other work under the contract includes safety engineering, reproduction, graphic arts and model design, technical publications, technical documentation repository, custodial, maintenance of photographic and reproduction equipment, refuse collection and laundry services.

This is the third one-year extension of the contract awarded in April of 1965.

Approximately 740 persons are employed by RCA and its subcontractors at the Marshall Center under this contract.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 22, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-113

MARSHALL SPACE FLIGHT CENTER, Ala. -- Two NASA-Marshall Space Flight Center men will offer testimony at a hearing in Washington regarding the initiation of direct, non-stop airline service between Huntsville and Los Angeles.

The hearing, to begin May 27, climaxes more than five years of local effort to obtain such a direct, non-stop connection to the West Coast.

Appearing before the Civil Aeronautics Board will be David H. Newby, associate deputy director, administrative, and William P. Morrow, chief of the Transportation Branch. They will speak for Center Director Wernher von Braun.

Four airlines -- Delta, Eastern, United and Western (of Los Angeles) -- have filed proposals for providing the service.

Airline travel between Huntsville and the West Coast presently takes the passenger through an intermediate city such as Memphis, Atlanta, St. Louis, Chicago or New Orleans.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 24, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt-residence 852-8847)

Release No. 68-114

MARSHALL SPACE FLIGHT CENTER, Ala. -- James T. Murphy, formerly a deputy manager in the Saturn V Program Office at the NASA-Marshall Space Flight Center, has been named director of the center's Safety Office.

Murphy's appointment to the new position was one of several actions taken by Dr. Wernher von Braun, MSFC director, in expanding the scope of the Safety Office.

As safety director, Murphy will supply the focal point for direction of MSFC's integrated safety program to include systems, industrial and public safety. He will also serve as a member of the MSFC Flight Readiness Review Board.

E. W. Neubert, who has organized and directed Marshall Center safety activities for the past year, will continue as chairman of the MSFC Safety Board, as a policy-making and advisory group.

Murphy is the son of Mrs. S. W. Murphy and brother of Mrs. R. E. Cannon, both of Hibbing, Minn. He is married to the former Miss Mary Jane Wheeler, daughter of Mrs. C. L. Wheeler of 1525 Mill Creek Way, Salt Lake City, Utah. Murphy's daughter, Mary Frances, is attending the University of Utah.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 27, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey-residence 883-0976)

Release No. 68-115

MARSHALL SPACE FLIGHT CENTER, Ala. -- A Saturn V launch vehicle second stage (S-II) departed Seal Beach, Calif., late Saturday, May 25, aboard the U. S. Navy ship Point Barrow enroute to the NASA-Marshall Space Flight Center's Mississippi Test Facility.

Second stages are assembled at Seal Beach by North American Rockwell Corp., under contract to the Marshall Center.

This stage, number six in the series, is scheduled to reach the Mississippi facility about June 9, there to undergo a captive firing and a tankage proof pressure test.

Two other S-II stages are now at MTF in the testing process.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 28, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz-Fayetteville, Tenn. 433-4958)

Release No. 68-116

J

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has extended by one year the contract held by Management Services, Inc., of Tennessee, for the provision of certain technical services at the Center.

The cost-plus-award-fee contract, costing an estimated \$3,647,603, will cover the period April 1, 1968 to March 31, 1969. This contract continues services provided by the firm under predecessor contracts since 1965.

These activities, in support of the Center's Technical Services Office, include such functions as maintenance and operation of aircraft, maintenance and operation of motor vehicles, building and grounds maintenance, chemical cleaning and photographic support.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 28, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-117

MARSHALL SPACE FLIGHT CENTER, Ala. -- A summer faculty fellowship program in space research will be held at the NASA-Marshall Space Flight Center from June 10 to August 16.

The program is being administered jointly by Auburn University, the University of Alabama and the Marshall Center.

Co-directors of the program are J. Fred O'Brien, Jr. of Auburn University and Dr. R. R. Head of the Marshall Center's Propulsion and Vehicle Engineering Laboratory. Associate director is Dr. Bobby F. Barfield of the University of Alabama.

This is the fifth year of the nationwide program involving several National Aeronautics and Space Administration centers and colleges and universities. It is the fourth year at the Marshall Center.

The 10-week program of cooperative research and study at the Marshall Center is for outstanding engineering and science educators.

Objectives of the program are to further the professional knowledge of qualified engineering and science faculty members, stimulate an exchange of ideas between participants and NASA, and enrich and refresh the research and teaching activities of institutions represented.

About 80 per cent of the participants' time will be devoted to research and the remainder to seminar sessions and tours.

A total of 31 educators representing 25 different colleges and universities will participate in the MSFC program. The participants, awarded fellowships for the period, were selected from a large group of applicants.

During the program, the participants will be faculty fellows of Auburn University. They will work on various projects in the several MSFC laboratories.

Similar programs are being conducted by: The University of Houston, Texas A&M and the NASA-Manned Spacecraft Center; University of Maryland, Catholic University of America and the NASA-Goddard Space Flight Center; Stanford University and the NASA-Ames Research Center; the College of William and Mary, Old Dominion College and the NASA-Langley Research Center; the Case Western Reserve University and the NASA-Lewis Research Center; the University of California at Los Angeles and the Jet Propulsion Laboratory; and Northeastern University and the NASA-Electronics Research Center. About 200 fellowships have been awarded for the nationwide program, about half to second year fellows.

Second year fellows returning to the Marshall Center this year and the institutions they represent are:

Ammon Andes, University of Kansas; Dr. Bobby F. Barfield, University of Alabama; Norman R. Braton, University of Wisconsin; David D. Chesek, Ohio University; Dr. Dean K. Frederick, Rensselaer Polytechnic Institute;

Dr. Mark R. Guidry, Louisiana State University; Lawrence A. Hitchingham, Jackson Community College; Dr. Bohdon T. Hnatuik, Drexel Institute; Arthur V. Jett, Jr., Tuskegee Institute; Walter A. Long, Westchester Community College; Dr. Dupree Maples, Louisiana State University; Cleon M. Mobley, Georgia Southern; Dr. Robert R. Reed, University of Alabama at Huntsville; Jerry R. Shipman, Alabama A & M; Garland A. Smith, Tuskegee; and Dr. William A. Walter, University of Florida.

First year fellows are: Dr. Walter E. Castro, Clemson University; Dr. John L. Dixon, Tennessee Tech; Dr. John O. Golden, Colorado School of Mines; Robert G. Golden, Newark College of Engineering; Dr. Daniel L. Hollis, University of Alabama; Dr. Sidney N. James, Auburn University; Dr. Martin T. Jasper, Mississippi State University; Dr. William H. Jermann, Memphis State; Dr. Ross O. McNary, University of Missouri at Rollo; Donald W. Nalley, Clemson; Dr. Robert W. Porter, Illinois Institute of Technology; Kenneth A. Stead, University of South Carolina; Dr. Arthur R. Taylor, University of Alabama; Dr. William O. Williford, University of Georgia; and Dr. James N. Zaiser, Bucknell.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

more info needed
May 28, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-118

SRL
MARSHALL SPACE FLIGHT CENTER, Ala. -- Two Aerobee sounding rockets are to be launched seconds apart to hurl into space scale models of solar measuring instruments scheduled to fly on the first manned solar observatory known as the Apollo Telescope Mount.

The two rockets are scheduled to be fired one minute apart from the White Sands Missile Range under the sponsorship of the National Aeronautics and Space Administration.

Timing of the launches will depend on the occurrence of a solar flare. It is hoped that both rockets can be launched to record solar phenomenon during a single flare period. The rockets and their payloads are ready now; if no such flare occurs within the next two weeks, they will be launched regardless.

Instruments riding in the rocket payloads are about one-third the size of the same experiments designed by two of the principal investigators for the Apollo Telescope Mount flight scheduled for 1971.

Principal investigators for the flights are Dewitt Purcell of the Naval Research Laboratory, Washington, D. C., and Dr. Riccardo Giacconi, American Science and Engineering, Inc., Cambridge, Mass. Ball Brothers Research Corp., Boulder, Colo., built the Naval Research Laboratory experiments. These include flight design verification units of an extreme ultraviolet spectroheliograph and an extreme ultraviolet disc monitor.

(13-238205 Launching Rockets)

American Science and Engineering will fly a flight design verification unit of its ATM X-ray spectrographic telescope.

The scientists and the space agency hope the instruments can get photographs of the same solar flare in different energy "wave lengths."

The two payloads are to parachute to earth after recording up to approximately 300 seconds at more than 100 miles altitude.

Main purpose of the flights is to accumulate exposure data on the photographic film planned for use on the initial ATM flight. Results obtained during the flights will be used to establish exposure rates for film used on the ATM flight.

Prediction and advance notice of solar flares will come from the Space Disturbance Forecast Center of Environmental Science Services Administration (ESSA) in Boulder, Colo.

The Apollo Telescope Mount project is being managed by the NASA-Marshall Space Flight Center in Huntsville. ATM is one of the two major early Apollo Applications missions planned for the early 1970's to gather information on man's ability to live and work in space for extended periods.

Purcell and Giacconi are two of the five principal investigators on the ATM. All of the ATM instruments are designed to monitor and record the sun's activity in varying wavelengths including X-ray, ultraviolet and visible light from outside the Earth's atmospheric shell.

Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 29, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-118

MARSHALL SPACE FLIGHT CENTER, Ala. -- Flat conductor cable technology, a product of the space program, has reached the development stage where it could revolutionize the electrical cable industry.

Research into development of lighter, more efficient and more reliable electrical cables for rockets and spacecraft has turned up numerous possible applications on the commercial market.

Flat conductor cables -- called FCC -- have been developed at the NASA-Marshall Space Flight Center for use on various rockets and spacecraft. About a dozen private industries also manufacture FCC.

Some flat cabling in the first Saturn IB rocket was flown as an experiment. The detector panels of the three Pegasus meteoroid technology satellite launched by Saturn I vehicles were connected by FCC. Flat cables will be used in the gimbal areas of the Apollo Telescope Mount because they are tougher and more flexible than round wire bundles.

Wilhelm Angele of the Marshall Center's Astrionics Laboratory, a pioneer in flat conductor cable technology development, said FCC could be the answer to the aeronautical engineer's problem of how to get bulky bundles of round wires into the limited spaces available in modern airplanes.

Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

May 31, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-119

MARSHALL SPACE FLIGHT CENTER, Ala. -- A second stage planned to fly as part of the first manned Apollo/Saturn V rocket later this year has passed a cryogenic proof pressure test at the NASA-Mississippi Test Facility.

The test, completed Wednesday afternoon (May 29) required that the liquid hydrogen fuel tank be subjected to flight pressures with the cryogenic fluid aboard. The stage was pressurized to 36.2 pounds per square inch.

The stage was returned to the Mississippi Test Facility from the Kennedy Space Center in Florida for the special test -- required for all manned Saturn V second stages. That action came after National Aeronautics and Space Administration officials decided that astronauts would fly the third Saturn V.

Marshall Center officials said the one million pound thrust stage will be removed from the test stand in mid-June and shipped to the Kennedy Space Center in late June.

The stage was tested by its maker, North American Rockwell Corp.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

FOR RELEASE:

2 p.m. CST
June 4, 1968

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-121

MARSHALL SPACE FLIGHT CENTER, Ala. -- The Boeing Company has been asked by the NASA-Marshall Space Flight Center to perform a failure effects analysis, components criticality determination and a reliability report on Saturn V launch vehicles through SA-510, the tenth flight vehicle.

The work is to be performed in Huntsville under a \$1,123,591 modification to the contract between Boeing and the Marshall Center.

It is a continuation of a launch vehicle reliability and quality effort that is already underway. The analysis of vehicle systems also defines certain critical components and how they affect a mission if they malfunction.

The analysis will be made in conjunction with efforts underway in the Propulsion and Vehicle Engineering Laboratory and the Saturn V Quality and Reliability Office.

The Boeing Co., also builds the 7.5 million pound thrust booster which powers the Apollo/Saturn V during the first two and one half minutes of flight into space.

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6/4/68

Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

June 7, 1968

IMMEIDATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-124

NEW ORLEANS, La. -- A large ocean going vessel arrived at the NASA-Marshall Space Flight Center's Michoud Assembly Facility before noon today, delivering a Saturn V launch vehicle second stage and five F-1 engines that are used to power the first stage of the Saturn V.

The Point Barrow picked up the cargo May 25 at Seal Beach, Calif., where the S-II stage was assembled by the North American Rockwell Corp., under contract to the Marshall Center.

In addition to the stage and engines, the shipment includes seven large F-1 engine components.

The stage is scheduled to be unloaded from the Point Barrow and taken to the NASA-Mississippi Test Facility where it will undergo a captive firing and a tankage proof pressure test. Two other S-II stages are now at MTF.

The engines and components will be unloaded and taken to the Michoud Assembly main plant for installation on a Saturn V first stage.

This marks the first time that the large F-1 engines have been shipped in quantity by water. Earlier shipments have been by truck and air. The Point Barrow, with ample cargo space above that required for the second stage, can bring F-1 engines from the west coast at no extra cost.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

June 10, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-126

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has signed a supplemental agreement with International Business Machines Corp., of Gaithersburg, Md., to cover spare parts for support of Saturn IB and Saturn V launch vehicle check-out complexes.

The agreement, in the amount of \$1,920,400, brings the total value of IBM's contract with the Marshall Center to \$222,297,314.

The firm builds instrument units that guide both the Saturn IB and Saturn V rockets as they are launched into space.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

June 10, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-127

MARSHALL SPACE FLIGHT CENTER, Ala. -- The General Services Administration will assume the operation and maintenance of the passenger vehicle motor pool at the NASA-Mississippi Test Facility effective July 1.

Art Daly, assistant to the director of the NASA-Marshall Space Flight Center's Industrial Operations, said about 40 employees currently employed by Cooke Brothers will be given the opportunity to transfer to the GSA. About 226 passenger type motor vehicles will also be transferred.

Cooke Brothers, which has been operating the motor pool under a subcontract to the General Electric Co., will continue to operate and maintain certain types of special vehicles, cranes and other heavy construction equipment.

Daly said a study initiated by the Marshall Center and GSA showed possible savings of about \$50,000 per year under the GSA operation.

He said existing motor pool facilities at MTF will be divided between Cooke Brothers and the GSA.

Daly said in the future GSA will also provide the vehicles, rather than NASA.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

June 19, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-131

MARSHALL SPACE FLIGHT CENTER, Ala. -- The second stage (S-II-3) of the next Saturn V flight vehicle is scheduled to leave the NASA-Marshall Space Flight Center's Mississippi Test Facility late June 22 on the first leg of its return trip to the NASA-Kennedy Space Center in Florida.

The stage will be moved from MTF to the NASA-Michoud Assembly Facility, New Orleans, aboard a barge. At Michoud on June 23 it will be loaded aboard an ocean-going Navy ship, the Point Barrow. The Point Barrow will leave Michoud June 24 for the 2-1/2 day trip to KSC.

S-II-3 is a part of what is expected to be the first manned Saturn V vehicle. The stage was returned to MTF for additional tankage tests when it was decided to work toward manning the rocket. That test, conducted by North American Rockwell Corp., has been concluded successfully.

In other rocket hardware movements, the NASA barges Poseidon and Palaemon are scheduled to leave Michoud June 20 in a single tow for Huntsville. The Poseidon has a cargo that includes an S-II interstage and an F-1 engine. The Palaemon is being returned to Huntsville empty to carry cargo leaving the Marshall Center.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

June 24, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-138

MARSHALL SPACE FLIGHT CENTER, Ala. -- A short course in "Flat Cable Technology" will be presented by the University of Alabama in Huntsville August 26-30 in conjunction with the Department of Commerce, the Institute of Printed Circuits, and the National Aeronautics and Space Administration.

The course is intended to acquaint the engineer with flat conductor cables and flexible printed circuits and to provide him with a working knowledge of their characteristics and applications.

Wilhelm Angele, MSFC Astrionics Laboratory, has been the foremost designer and promoter of the flat conductor cable since its inception. Angele will give the keynote address and discuss the history of flat cable. He will also serve as host for a class tour of the Marshall Center.

Dr. William E. Webb, associate professor of electrical engineering at the University of Alabama, is the coordinator and an instructor. Assisting Angele and Dr. Webb will be instructors from several universities and industries throughout the country.

For further information on the course contact the Short Course and Conference Division at the University of Alabama in Huntsville.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

June 25, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-139

MARSHALL SPACE FLIGHT CENTER, Ala. -- Twenty-two Super Loki Dart rockets have been bought by the NASA-Marshall Space Flight Center for use in the agency's high altitude atmospheric research at the NASA-Kennedy Space Center.

Super Loki Dart rockets will replace the larger and more costly Cajun Dart sounding rockets now used in the high altitude studies. Space Data Corp. manufactures both of the solid propellant vehicles.

NASA successfully completed five development flight tests of the new system in April at the White Sands Missile Range.

The Super Loki Darts will be launched to make high altitude wind measurements before and after Saturn launch vehicle flights. One rocket will be launched 24 hours before a Saturn V or Saturn IB flight and a second one will be flown about an hour after the Saturn leaves the ground.

A 13.5 pound Dart payload rides atop the solid propellant Super Loki. The one-stage rocket carries the payload to about 8,000 feet altitude before separation and the light payload coasts to about 70 statute miles high in a typical 2-1/2 minute flight. On the downward journey, the Dart ejects a cloud of super fine chaff. The Aerospace Environment Division of the Marshall Center's Aero-Astro dynamics Laboratory, the group directing the project, said the metallic chaff is so fine gravity has little effect, but winds buff it around.

By radar-tracking the descending cloud, scientists can determine the nature and direction of the high altitude winds that influence the flights of the large Saturn rockets. Wind velocities at these altitudes can be as high as 200 or even 300 miles per hour.

Rocket scientists are especially interested in tracking the chaff as it floats earthward near the upper reaches of the measurable atmosphere -- from about 56 miles down to 48. Wind above the upper limit is negligible and below 48 miles the chaff cloud is so large and thin that it can no longer be tracked accurately.

The Super Loki Dart is 121.5 inches long and 4 inches in diameter. Each vehicle costs \$800 and the manufacturer has guaranteed an 80 per cent performance rate or the vehicles will be replaced. Cajun Dart rockets cost \$2,800 each. The lower cost rockets will have the same performance as the more costly ones.

Winds at intermediate altitudes are monitored by balloons while the small rockets are used to reach and measure the upper reaches of the measurable atmosphere.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

June 30, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959

(Charles Kurtz - Fayetteville, Tenn. 433-4958) Release No: 68-143

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center will observe its eighth birthday Monday (July 1).

No special ceremonies are scheduled.

The largest of the space agency's field centers, the Marshall Center started business July 1, 1960, with 4,400 employees working in facilities valued at an estimated \$100 million.

On its eighth anniversary, MSFC has 6,500 employees. The plant value is estimated at \$400 million. Real property values account for \$140 million of this and the remaining \$260 million is the value placed on capital equipment.

The Marshall Center was formed by the transfer en masse of the Wernher von Braun rocket development team, then working with the Army Ballistic Missile Agency at Redstone Arsenal, to the National Aeronautics and Space Administration. Army facilities and some 1,800 acres at Redstone Arsenal were acquired for the Center. MSFC also has the Michoud Assembly Facility in New Orleans, La., and the Mississippi Test Facility in Hancock County, Miss.

Achievements during the first eight years include the development and successful flight of the Saturn I, Saturn IB and Saturn V launch vehicles.

MORE

June 28, 1968

Scientists and engineers are presently preparing for the manned Apollo/Saturn IB and Apollo/Saturn V flights leading to the lunar landing. Work is also underway on Apollo Applications spacecraft. Apollo Applications work includes the Saturn I Workshop, planned as the first manned space station, and the Apollo Telescope Mount or manned orbiting solar observatory.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

July 18, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-158

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has completed tests associated with the "longitudinal oscillations" problem of the Saturn V launch vehicle and has mapped out a means of preventing excessive oscillations. The solution will be verified in a test firing of a flight stage early next month.

The solution will be the use of "accumulators" or small gas reservoirs in the liquid oxygen prevalves of the first stage to change the frequency of oscillation in the propulsion system.

The oscillations resonating with the vehicle structure natural frequency caused considerable concern among rocket engineers during a portion of the flight of the second Saturn V. It was launched from the NASA-Kennedy Space Center last April 4.

The Saturn V -- a three-stage rocket 363 feet tall with the Apollo spacecraft in place -- was developed by the NASA-Marshall Space Flight Center as the launch vehicle for the manned lunar landing mission.

Engineers working on the problem encountered during the flight of the second Saturn V have completed analyses, studied flight data and conducted hundreds of tests in identifying the cause of the up-down motion of the vehicle.

The natural frequency of the vehicle structure is about four cycles per second. The frequency of the propulsion system was between four and five cycles per second.

Changes in mass, such as when propellants are being drained from the tanks, increase the frequency level of the structure. The frequency level of the propulsion system also increases as the flight progresses but at a slower rate.

Since the propulsion system frequency was only slightly above that of the structure, and since the structure frequency increased faster, the frequencies grew closer together and finally coincided.

When two frequencies are the same or very near, the amplitude, or severity, of the oscillations are multiplied. This is what happened during the flight of the second Saturn V.

The task facing the engineers was finding the best method of keeping the frequencies apart. Several possible methods were considered but these were narrowed to two "candidate fixes" which received maximum attention.

One possible solution was to inject helium into the liquid oxygen feed lines to change the frequency of the propulsion system.

The decision was made, however, to use "shock absorbers" in the LOX prevalves to dampen out any oscillations that might occur in the feed ducts. This would reduce the natural frequency of the propulsion system to about two cycles per second, lower than that of the structure.

Prevalves are located in the five LOX ducts just above the engines. They serve to detain the LOX in the feed ducts until late in the countdown, when the fluid is admitted to the main LOX valves on the engines in preparation for ignition.

Each pre valve has a cavity in which a gas pocket will be maintained. Filling the cavities with helium will begin ten minutes before liftoff and will continue after start-up of the first stage engines.

A relatively small amount of gas is required -- about 2.1 cubic feet in all five of the first stage engine feed systems. The only modification required to the stage is provisions of a means of injecting helium into the pre valve.

The helium is fed into the accumulator initially from a ground source; after launch the small amount needed for replenishing comes from the on-board helium vessels which are used to supply gas for the operation of certain valves, for pressurizing the fuel tank and other purposes.

Kits for modifying the vehicle to accept either of the two candidate fixes were prepared and tested early in the study to save time.

Modifications are being made now in the first stage of the third Saturn V launch vehicle, now at Kennedy Space Center, and to the first stage of the sixth Saturn V. The latter stage is in a test stand at the Mississippi Test Facility being prepared for test firing early in August.

Lee B. James, Saturn V Program manager at the Marshall Center, said about 1000 engineers working on the problem included those from MSFC, the Boeing Company, the Martin Company, TRW, Inc., Aerospace Corp. and Rocketdyne Div. of North American Rockwell. Martin and TRW personnel worked on the problem from independent positions, and Aerospace Corp. engineers served as consultants.

James said the unanimous decision of all involved to use the accumulator method indicates how thoroughly the test, propulsion and analysis work was done.

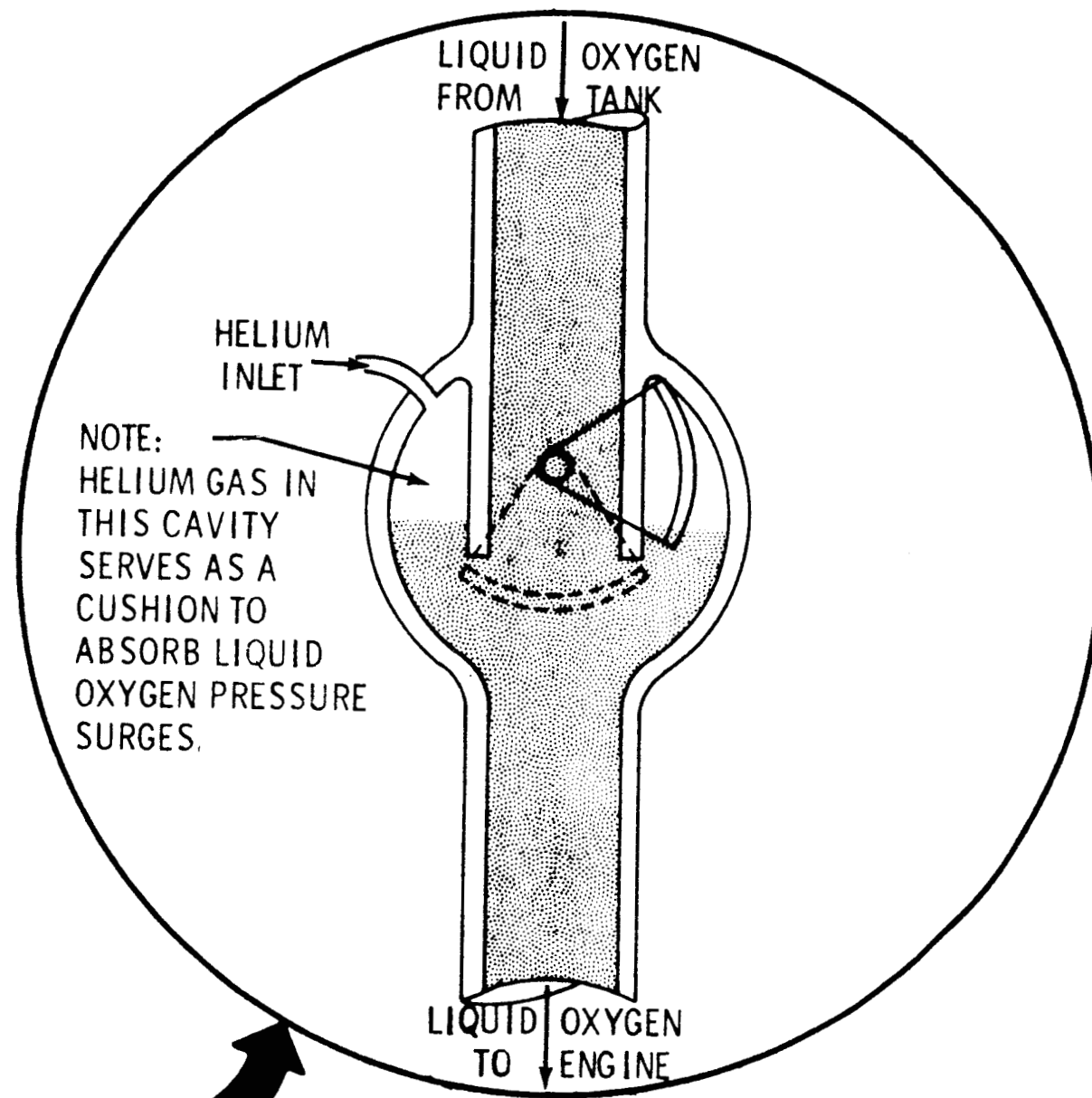
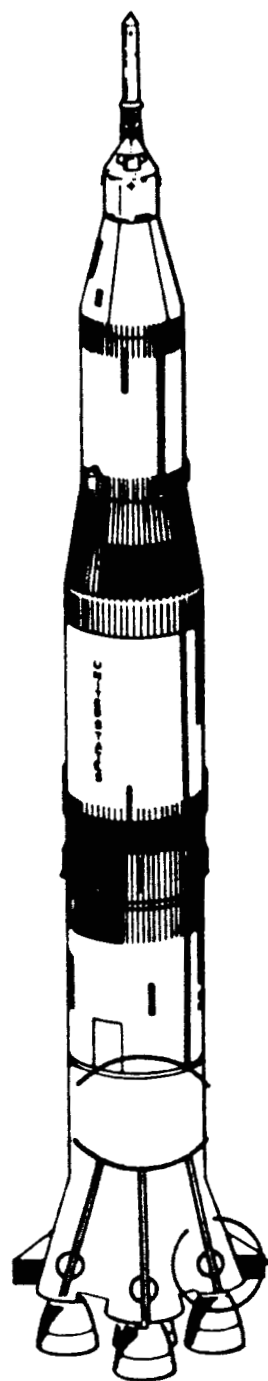
Results of the work and the recommendation were presented to Lt. Gen. Samuel C. Phillips, Apollo Program Director and Dr. George Mueller, NASA associate administrator for Manned Space Flight during a conference Monday. Both accepted the recommendations.

The conference included representatives of the industry team involved, the Marshall Center, Kennedy Space Center, the NASA-Manned Spacecraft Center and NASA Headquarters.

James said tests indicate that the oscillation levels for the upcoming flight of the third Saturn V will not exceed those of the first Saturn V, which made a "textbook" flight on Nov. 9, 1967.

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(Attached is a drawing of the LOX prevalue.)



Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

8
July 23, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-164

MARSHALL SPACE FLIGHT CENTER, Ala. -- Carl Prince, 48, has been appointed deputy director of the Computation Laboratory at the NASA-Marshall Space Flight Center.

The appointment was announced by Hermann K. Weidner, director of the MSFC Research and Development Operations.

Prince, a former assistant laboratory director, fills a position recently held by Charles L. Bradshaw. Bradshaw has left the Marshall Center to work in private industry.

A native of Sheffield, Ala., Prince has been in the Computation Laboratory and its predecessor organizations since 1952. He became assistant director of the Computation Laboratory in 1963.

Prince earned a bachelor of science degree in mathematics in 1950 from State Teachers College, Florence, Ala., and a master of science degree in mathematics in 1951 from Peabody College, Nashville.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

July 23, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-165

MARSHALL SPACE FLIGHT CENTER, Ala. -- Dr. Harold C. Urey, Nobel prize winner and chemistry professor at-large of the University of California, will be at the NASA-Marshall Space Flight Center on July 30 to deliver a lecture in the Summer Faculty Fellowship Program.

Dr. Urey's lecture, entitled "Comments on the Possible Origin and History of the Moon," will be given at 10:30 a.m. in Morris Auditorium.

This will be Dr. Urey's second visit to the Marshall Center. His first was in December 1960 to address the Center's Space Science Seminar.

Holder of the 1934 Nobel prize in chemistry, Dr. Urey is credited with the discovery of deuterium or heavy water. His other scientific interests include entropy of gases, atomic structure, absorption spectra and structure of molecules; properties and separation of isotopes, exchange reactions; measurement of paleotemperatures; chemical problems of the origin of the earth, the meteorites, the moon and the solar system.

Dr. Urey was graduated from the University of Montana in 1917 with a bachelor of science degree. He earned a doctorate in chemistry from the University of California in 1923 and was an American-Scandinavian Foundation Fellow in Copenhagen, Denmark, in 1923-1924.

He is a lunar sciences consultant for both NASA's Headquarters in

Washington and the NASA-Jet Propulsion Laboratory, Pasadena, Calif. He is an advisory member of the Space Science Board of the National Academy of Sciences.

Dr. Urey has been awarded honorary degrees by more than 30 institutions and is a member of more than 25 scientific organizations.

The noted scientists will speak to the 31 educators participating in the Summer Faculty Fellowship Program as well as employees of the Center. The teachers, representing 25 colleges and universities, are working here through August 16.

During their 10-week stay the teachers attend a special seminar on aerospace technology. The program is jointly administered by the Marshall Center, Auburn University and the University of Alabama. J. Fred O'Brien Jr. of Auburn, Dr. R. R. Head of MSFC's Propulsion and Vehicle Engineering Lab, and Dr. Bobby F. Barfield, University of Alabama, are directing the program. Seminar sessions are conducted each Tuesday and Thursday.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

July 30, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-169

sci

MARSHALL SPACE FLIGHT CENTER, Ala. -- Two newly appointed science consultants to Dr. Wernher von Braun made their first visit today to the NASA-Marshall Space Flight Center.

Dr. von Braun, MSFC director, announced that Dr. Herbert Friedman, Naval Research Laboratory and Dr. C. Robert O'Dell, director of the Yerkes Observatory, had accepted his invitation to work with MSFC as science consultants. They will advise him on the Marshall Center's involvement in science -- particularly astronomy in connection with the Apollo Telescope Mount.

Dr. Friedman is currently superintendent of the Space Science Division and chief scientist of the E. O. Hulburt Center for Space Research of the Naval Research Laboratory.

Dr. Friedman conducted his first experiments in rocket astronomy with a V-2 rocket in 1949. He has since participated in more than a hundred rocket experiments and numerous satellite programs. These experiments have traced the solar cycle variations of X-rays and ultraviolet radiations from the sun, produced the first X-ray and ultraviolet photographs of the sun, discovered the hydrogen geocorona, and measured the ultraviolet fluxes of early-type stars.

In 1964, he received the President's Award for Distinguished Federal Civilian Service, the highest honor given to civilian employees. The citation lauded Dr. Friedman for his leadership in the new science of rocket astronomy, and his achievements in advancing the nation's program in space and the extension of man's knowledge of the universe.

Dr. Friedman received his bachelor of science degree from Brooklyn College in 1936 and his Ph.D. in physics from The Johns Hopkins University in 1940. He joined the Naval Research Laboratory in 1940.

Dr. O'Dell has served as director of the University of Chicago's Yerkes Observatory, at Williams Bay, Wisconsin, since 1966. He is also chairman of the Department of Astronomy and Astrophysics at the University of Chicago.

Dr. O'Dell's academic fields of special interest include mass loss from highly-evolved stars, physical processes in gaseous nebulae, nature of interstellar particles and physical processes in comets.

He received his bachelor of science degree in education from Illinois State University in 1959. He earned a Ph.D. in astronomy in 1962 at the University of Wisconsin.

Dr. O'Dell has served as an assistant professor at the University of California at Berkeley, and the University of Chicago. He was named an associate professor at Chicago in 1966 and attained professor status in 1967.

He was a Carnegie Fellow at Mount Wilson and Palomar Observatories from January 1962 through January 1963. Dr. O'Dell is also a consultant to the NASA Astronomy Missions Board.

These are the first such consultants appointed by Dr. von Braun.

During the one day visit, Dr. Friedman and Dr. O'Dell are discussing the Marshall Center's science program with MSFC officials including Dr. von Braun, Dr. Eberhard Rees, deputy director, technical; Edmund F. O'Connor, director of Industrial Operations; William Brooksbank, Propulsion and Vehicle Engineering Laboratory; Dr. William Johnson, director of Experiments Office; Dr. Ernst Stuhlinger, director of Space Sciences Laboratory; and Frank Williams, director of Advanced Systems Office.

The two new consultants also are seeing mockups of the Saturn I Workshop and the Apollo Telescope Mount, and touring the Astrionics and Space Sciences Laboratories.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

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August 6, 1968 E

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tennessee 433-4958) Release No. 68-175

MARSHALL SPACE FLIGHT CENTER, Alabama -- An "open house" commemorating the tenth anniversary of the National Aeronautics and Space Administration will be held Sept. 28-29 at the NASA-Marshall Space Flight Center.

The Marshall Center, largest of the space agency's field centers, will be open to the general public all day on Saturday, Sept. 28.

Sunday, Sept. 29, has been designated "family day." Marshall Center employees and contractors have been invited to bring their families to tour the Center from 12 noon until 4 p. m.

The two-day event is being held to observe NASA's achievements in space research during the agency's first 10 years. NASA was organized on October 1, 1958.

A feature of the observance will be the Marshall Center's annual awards ceremony on Saturday morning. Special awards for long service, exceptional performance and inventions will be given to selected employees. Dr. Wernher von Braun, MSFC director, will make the presentations and will speak at the ceremony.

Areas open to the visiting public include the MSFC Headquarters, Building 4200 on Rideout Road; the Space Orientation Center; Test Lab areas;

MORE

and the Manufacturing Engineering Lab's Apollo Applications mockup area in Building 4755.

Special rocket and space hardware exhibits will be displayed in front of Building 4200 and the Space Orientation Center. The Saturn I Workshop mockup, the Apollo Telescope Mount model, rocket engines and other hardware will be featured in the Manufacturing Engineering Lab. At the Test Lab, the visitors will view engine and stage test stands and other testing facilities.

Spacemobile lecturers will conduct space science lectures at hourly intervals Sept. 28 in Morris Auditorium. The lecturers will also be presented on Sunday afternoon.

The Marshall Center previously opened its Redstone Arsenal complex to the public in 1966 and 1961. Purpose of these open house events is to give the public a chance to see and more fully understand and appreciate the role the Marshall Center and NASA play in the nation's space exploration program.

More than 20,000 people were here for the "Marshall Space Day 1966."

Dr. von Braun is appointing a committee to plan and run the open house event. The committee appointments and details on the event will be announced later.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

August 13, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-178

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has issued a request for quotations for the development of an actuator system for the Apollo Telescope Mount (ATM).

The request calls for bids no later than September 9 for the design, development, fabrication, test, qualification and delivery of the system to the NASA-Marshall Space Flight Center.

The contract to be issued will call for completion of the work within nine months. Development of engineering and prototype models will lead to production of a flight configuration.

As currently envisioned, the system would be contained in a cylinder about 18 inches long and a foot in diameter with a shaft extending from one end.

The actuator system, estimated to weigh about 20 pounds when manufactured, will be used to deploy the solar panels of the ATM. The panels will provide the necessary electrical power for ATM operations.

The ATM is one of the scientific spacecraft being developed for use in the Apollo Applications Program (AAP). It will be placed in orbit and docked with the Saturn I Workshop, also under development by the Marshall Center. Astronauts manning the Workshop on a 56-day mission in earth orbit will use the ATM in studies of the solar system from above the earth's atmosphere.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

August 14, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-180

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has awarded contracts to two firms for studies aimed at the eventual development of optical technology experiment systems.

The contracts, 10-month efforts, were awarded by the NASA-Marshall Space Flight Center. They are: Perkin-Elmer Corp., Electro Optical Div., Norwalk, Conn., \$141,350; and Chrysler Corp. Space Div., New Orleans, \$146,540.

The studies, carried out for the NASA Office of Advanced Research and Technology, are parallel efforts continuing research conducted in the fields of optical communications and large telescope technology. The new contracts will concentrate on the optical communications aspect.

Engineers hope the studies will lead to the definition of a series of spaceflight experiments that would verify the technology required for operational spacecraft-ground laser communication systems.

The use of laser beams gives such a system the potential of transmitting a million bits of information per second from other planets, such as Mars. This is extremely fast compared with the eight-bits-per-second transmission rate by radio frequency from Mariner IV as it passed Mars.

A communication system developed using information gained in these and past studies would be tested, possibly, on the ground, in the atmosphere aboard airplanes or balloons, and in space aboard a spacecraft or launch vehicle.

The firms also will analyze alternate methods of testing optical communications systems in space. The alternatives would be considered from the standpoints of time and costs.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

August 20, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-188

MARSHALL SPACE FLIGHT CENTER, Ala. -- A contract between the NASA-Marshall Space Flight Center in Huntsville and Sanders Associates in Nashua, New Hampshire, has been extended to provide engineering services and logistic support on seven Saturn V display systems.

Two of the systems are located at the Marshall Center, four at the NASA-Kennedy Space Center in Florida and another at the International Business Machines facility in Huntsville.

Amount of the award is \$1,800,000.

Sanders will also provide spare parts, repair services and configuration management for the operational display systems.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

FOR RELEASE:

September 10, 1968

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-205

MARSHALL SPACE FLIGHT CENTER, Ala. -- Technical personnel from the Marshall Center and the Department of Defense will hold three separate meetings here this week concerning the improvement of electrical components.

Both DOD and the Space Agency are heavy users of small electronic components that must be highly reliable for use in huge space rockets and missile systems.

J. K. Morris of MSFC's Quality and Reliability Assurance Laboratory said more than 100 visitors will attend a seminar today on Seal Integrity of Electronic Parts.

The meeting, which will be held in Morris Auditorium, will be attended by relay manufacturers, semi-conductor manufacturers, government representatives and other electronic parts users.

A second meeting which starts Wednesday morning involves Air Force, Navy, and other Department of Defense representatives along with NASA technicians. It concerns a report on plastic encapsulated semi-conductor devices and microcircuits, test methods and procedures.

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The third session, to be held Wednesday and Thursday, is a meeting of the Defense Electronics Supply Center Coordination Committee on Diodes.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

September 18, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-213

MARSHALL SPACE FLIGHT CENTER, Ala. -- About 200 persons are expected to attend a systems engineering conference at the NASA-Marshall Space Flight Center Thursday and Friday, Sept. 19-20. The meeting, to be held in MSFC's Morris Auditorium, is being conducted by the American Institute of Industrial Engineering.

Most of the participants are from the Huntsville area, with the exception of program speakers.

Local speakers will include Dr. George McDonough of the Marshall Systems Engineering Office. The group will be welcomed to MSFC by E. D. Mohlere, representing Marshall Director Wernher von Braun.

The purpose of the meeting is to present the latest ideas regarding systems analysis and management for use in a complex research and development activities.

Speakers include: Horace R. Lowers, chief engineer, U.S. Army Missile Command; Dr. George K. Chacko, senior staff scientist, TRW, Inc., Washington, D. C.; Ronald P. Geist, Computer Applications, Inc., Huntsville; Dr. George P. Huber, University of Wisconsin.

Maj. Gen. Charles W. Eifler, commanding general, U.S. Army Missile Command; Joseph C. Moquin, president, Brown Engineering; Arthur E. Cooper, vice president and general manager of IBM's Space Systems Center; Robert Paulson, Rand Corp., Santa Monica, Calif., and Donald Covault, Georgia Institute of Technology.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 1, 1968 ✓

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-231

MARSHALL SPACE FLIGHT CENTER, Ala. -- The Marshall Space Flight Center of the National Aeronautics and Space Administration has selected the Radio Corporation of America, Van Nuys, California for negotiation of a contract to provide logistics and engineering support for the Saturn ground computer systems and associated equipment.

Work related to furnishing logistics and engineering support will be performed at Huntsville, Ala., Van Nuys, Calif., and Camden, N.J.

RCA was under contract to furnish logistics and engineering support through September 30, 1968. Estimated value of the cost-plus-fixed-fee contract is \$5.1 million, covering the period from October 1, 1968 through June 30, 1970.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 2, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-233

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has selected two aerospace firms for further negotiations on a contract to provide general purpose digital computers for the Apollo Telescope Mount project.

The ATM is under development by the NASA-Marshall Space Flight Center as a part of the Apollo Applications Program. It will be used in studies of the sun from above the earth's atmosphere.

Selected for competitive negotiations were International Business Machines, Inc., Federal Systems Div., and Teledyne Systems, Inc. Negotiations will begin in two to three weeks.

Six firms submitted bids in response to a recent request for quotations. Others were: General Precision Systems, Kearfott Div.; Litton Systems, Inc.; Sperry Rand Corp., Univac Div.; and the Raytheon Co.

The contract will call for the design, development and fabrication of five ATM computers, plus the flight programs and associated checkout equipment.

The computers to be produced include a flight computer and a flight spare, one for ATM computer programming, one for qualification testing and one to be used in simulation work.

Constraints include a maximum weight of 70 pounds for the computer with maximum dimensions of 18 by 13 by 12 inches. Maximum power consumption is to be 150 watts.

The product is to be a general purpose digital computer with a minimum 8,000-word memory expandable to 16,000 words. The required reliability is 10,000 hours mean time between failures.

The ATM consists of the ascent stage of the lunar module and a "rack" containing the telescopes and experiments to be used in studies of the sun. Astronauts will control the ATM from the lunar module ascent stage. The spacecraft will be docked to the Saturn I Workshop.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 2, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-234

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has modified a contract with American Science and Engineering, Inc., of Cambridge, Mass., which calls for production of flight hardware for the Apollo Applications Program.

The \$5,413,000 addition to the contract requires final design, fabrication, assembly, integration, test qualification and acceptance of a prototype and flight unit X-ray spectrographic telescope.

The telescope will fly in the 1970's as part of a Apollo Telescope Mount which is to be attached to a spent Saturn rocket stage, called the Saturn I Workshop. The orbiting spent stage will be converted into a space workshop from which men will stay for prolonged periods and perform various experiments.

The spectrographic telescope will be used to accumulate data on X-ray emissions from both the quiet and active regions of the Sun.

It is estimated that deliveries of the prototype and flight unit to the Marshall Center will begin in late 1969. The Marshall Center will integrate the equipment into the Apollo Telescope Mount.

This award brings the total value of the contract to American Science and Engineering to \$11,617,471.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 8, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-241

MARSHALL SPACE FLIGHT CENTER, Ala. -- A few extra pounds of instrumentation and related electronics are being carried on the SA-205 vehicle to allow Marshall Space Flight Center engineers to keep a close eye on new propellant lines installed on the second stage engine.

The new lines, approximately 5/8 inch in diameter, carry hydrogen and oxygen to the augmented spark igniter (ASI) or sparkplug on the J-2 engine.

ASI lines failed on the last flight of the Saturn V. That vehicle uses J-2 engines on both its second and third stages, the latter of which also serves as the top stage of the Saturn IB vehicle.

On the Saturn V flight of April 4, 1968, ASI lines on one of the five second stage engines and on the single third stage engine ruptured during flight and degraded the performance of the rocket, although most mission objectives were met.

The flexible sections of the lines -- where the breaks occurred -- have been removed.

Extra instrumentation in the form of temperature, pressure and vibration sensors, have been added to this vehicle engine to report fully on the performance of the lines. The data will be routed through a special 13-pound multiplexer to the FM telemetry system in the Saturn IB's instrument unit for transmission from earth orbit to ground stations.

Temperature sensors will be in operation on the liquid oxygen line, the fuel line and the ASI combustion chamber. Strain gauges will also be on the ASI lines.

Pressure gauges will be on the ASI fuel injector.

Vibration sensors will be on the combustion chamber dome, the side of the liquid oxygen turbopump, the side of the liquid hydrogen turbopump, the main fuel valve-actuator, the ASI connector flange at the liquid hydrogen manifold, on the liquid hydrogen ASI connector block, the main fuel valve and the main liquid oxygen valve.

The new type lines have also been installed on all J-2 engines of the third Saturn V flight vehicle, AS-503, which is to carry a manned Apollo into earth orbit in December. This will be Apollo 8.

Data provided by the Apollo 7 flight will be evaluated and related to the Apollo 8 vehicle.

About three times as many instruments will be monitoring the ASI on the next Saturn V flight as on the Apollo 7 mission. AS-503 will also have two extra telemetry systems and associated transmitters to handle the analog data provided by the instruments monitoring the ASI systems.

The improved ASI lines, designed by the engine manufacturer, the Rocketdyne Division of North American Rockwell, will be installed on all future Saturn IB and Saturn V launch vehicles.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 16, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-246

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center and the Rocketdyne Division of North American Rockwell Corp., signed an agreement that calls for an extension of the J-2 engine production effort through April 30, 1970.

But the contract extension calls for a slower production rate of the 200,000 pound thrust engines that are used on both the Saturn IB and Saturn V rockets.

Production was cut from three engines per month to one. The original effort would have expired August 30, 1968. Due to an overall stretch-out of the launch vehicle production effort, however, engines are not needed as rapidly as was originally planned.

The modification with Rocketdyne amounts to approximately \$8.4 million.

Under the original contract, Rocketdyne was to have produced 155 J-2 engines. A single J-2 powers the top stage of both the Saturn IB and Saturn V. In addition, the second stage of the Saturn V is powered by a cluster of five J-2 engines.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 16, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-247

MARSHALL SPACE FLIGHT CENTER, Ala. -- Negotiations have been completed between the North American Rockwell Corporation's Rocketdyne Division and the NASA-Marshall Space Flight Center on a contract modification that calls for the extension of F-1 engine deliveries through June, 1970.

The change, amounting to approximately \$4 million, decreases engine production rate from two to one per month. This is to align the engine effort to a stretch-out in the production rate of the huge 7.5 million pound thrust Saturn V boosters. Five of the F-1's power each booster.

Prior to the change, the final F-1 engine for the initial order of 15 Saturn V boosters would have been delivered in April, 1969. Under the original agreement, Rocketdyne was to have produced 106 F-1's for the Marshall Center.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 18, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-248

MARSHALL SPACE FLIGHT CENTER, Ala. -- An early engineering evaluation of a Saturn IB launch vehicle which flew three astronauts into earth orbit Oct. 11 verified that the huge rocket performed almost flawlessly.

It marked the fifteenth flight of the Saturn I's and all were successful. The Saturn vehicles were developed under the technical direction of the NASA-Marshall Space Flight Center, Huntsville, Ala.

The rocket was launched from the NASA-Kennedy Space Center in Florida at 11:02 a. m. EDT during steady surface winds of about 20 knots -- almost twice as high as winds recorded during previous Saturn launches.

Flight events occurred very close to predicted times. Significant happenings during the flight are listed below with the numbers indicating elapsed seconds after liftoff. Predicted times are in parentheses.

Start pitch and roll 10.31 (10.36); end roll 38.48 (38.36); stop pitch 133.92 (134.66); inboard engines cutoff 140.65 (140.28); outboard engines cutoff 144.32 (143.28); stage separation 145.59 (144.58); guidance initiation 169.76 (168.28); S-IVB stage cutoff 616.76 (614.80).

Trajectories of both stages were extremely close to nominal and orbital insertion conditions were satisfactorily met.

First stage outboard engine cutoff came at 37.6 statute miles altitude, 37.3 miles range, and at a velocity of 5,197 miles per hour.

Orbital insertion came at 141.7 statute miles altitude, 1,175.6 miles down-range and at a velocity of 17,419 miles per hour.

The launch vehicle reached Mach 1 (speed of sound) at 62.3 seconds -- .7 seconds later than expected -- at an altitude of 4.7 statute miles.

Maximum dynamic pressure occurred at 78 seconds at an altitude of 7.1 nautical miles, which was .3 statute miles higher than nominal.

The Saturn IB booster's propulsion and mechanical systems operated satisfactorily. This includes the fuel pressurization, liquid oxygen pressurization, control pressure, retrorockets, and engine systems. The stage develops 1.6 million pounds thrust.

Performance of the second (S-IVB) stage and associated systems was normal. The stage is powered by a single J-2 engine which produces 225,000 pounds thrust at operating altitude.

J-2 engine mainstage operation was within one percent of expected performance. The S-IVB burn time was about 470 seconds and within one second of the predicted time. The engine stage pneumatic system and hydraulic system operated satisfactorily.

Propellant residuals at J-2 cutoff were more than expected. About 1,590 pounds of liquid oxygen (1,586 pounds were predicted) and 2,620 pounds of liquid hydrogen (2,049 pounds predicted) remained in the stage.

The auxiliary propulsion system performed satisfactorily.

The S-IVB stage emergency destruct system was rendered safe as planned.

The first and only liquid oxygen tank vent, initiated just after J-2 engine cutoff, dropped the liquid oxygen tank ullage pressure from about 38 pounds per square inch to about 20 pounds per square inch at vent termination.

Quick-look data indicates that the instrument unit's guidance system performed satisfactorily. All orbital guidance and sequencing functions performed correctly.

The instrument unit environmental control system was normal through the flight. Vehicle electrical systems also performed as expected. Batteries in the second stage and instrument unit exceeded their design lifetime. One was still operating after more than 60 hours.

The Saturn IB stage base region pressure and thermal data indicates that the environments were close to those expected.

Engineers and designers will take a look at a few minor deviations noted during the flight even though they had no adverse affect on the mission.

These include:

*Failure of the J-2 engine thrust chamber temperature to drop at the expected rate just before liftoff. This caused a two minute and 45 second hold until the temperature dropped to an acceptable level.

*A small performance shift of less than one percent at about 394 seconds into the burn of the second stage J-2 engine. Similar shifts have been observed during static testing and, at this time, the shifts are not considered abnormal. But the cause is unknown.

*Of the 700 vehicle measurements taken during the flight, only four were possible failures and in addition, three are in question. One of the three was an external temperature measurement on the augmented spark igniter fuel line which indicated an erratic behavior at about 415 seconds into the second stage burn, but returned to normal prior to J-2 engine cutoff. An analysis is being made of this measurement.

*During the first stage boost phase, a slightly higher gas temperature was recorded in the heat shield region than that recorded on previous flights. This was for a 20 second period only.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 21, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Maurice Parker - residence 859-0121)

Release No. 68-249

MARSHALL SPACE FLIGHT CENTER, Ala. -- A preliminary design review of the Apollo Telescope Mount (ATM) will be held at the NASA-Marshall Space Flight Center Wednesday (Oct. 23). It will be attended by representatives of the National Aeronautics and Space Administration headquarters, the three NASA manned space flight centers, and ATM principal investigators and contractors.

The 16-member design review board will consider results of detailed working sessions and an ATM crew systems review held at MSFC Sept. 12-13 as a step in making a careful study of the ATM spacecraft to obtain satisfactory design.

On Tuesday (Oct. 22) a larger, 30-member group (called a pre-board) will meet to screen and categorize the discrepancies and review comments that came from the earlier meetings, in preparation for the design board session the following day.

William Horton, assistant director of the MSFC Astrionics Laboratory, will chair the first day's session. Rein Ise, ATM project manager in MSFC's Industrial Operations, is chairman of the review board and will be in charge at the Wednesday meeting.

Two astronauts from the NASA-Manned Spacecraft Center, Owen Garriott and Edward Gibson, will attend.

The Apollo Telescope Mount is a manned solar observatory project planned as part of NASA's Apollo Applications Program. The ATM's complex solar astronomy instruments will observe the sun from earth orbit during the early 1970s.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

FOR RELEASE:

PM's, October 24, 1968

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-251

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration will assist the Environmental Sciences Service Administration in a large scale oceanography/meteorology experiment to be conducted next year in the vicinity of Barbados Island in the Atlantic Ocean.

The project is called BOMEX, which stands for the Barbados Oceanographic Meteorological Experiment.

NASA Headquarters has asked the Marshall Space Flight Center in Huntsville to open negotiations with a contractor to design, install, maintain and operate a computerized data management system at the Marshall Center's Mississippi Test Facility which is located near the Gulf Coast.

Data will be pouring into the system from a 300 square mile area in the Atlantic Ocean just east of Barbados and will include measurements from satellites, five to seven ships, 10 to 20 aircraft, many buoys, and from high in the atmosphere to the bottom of the ocean.

The Marshall Center, acting for NASA's Office of Space Science & Applications, is negotiating a contract with the General Electric Co. for a data management system for BOMEX at MTF. The cost is expected to be more than \$750,000 for 15 months.

10/23/68

GE is the support contractor at MTF, providing common services to the prime contractors who static fire Saturn rocket stages at the Mississippi base.

A number of government agencies are participating in the experiment. These include the Department of Commerce, Coast and Geodetic Survey, Environmental Data Service, Environmental Research Laboratories, Weather Bureau, National Environmental Satellite Center, Air Force, Navy and Army branches of the Department of Defense, Department of Transportation, Coast Guard, Atomic Energy Commission, Department of Interior, Bureau of Commercial Fisheries, National Oceanographic Data Center, National Science Foundation, National Guard Bureau and Department of State.

The Barbados area was selected for the pilot project. It could lead to a global data search designed to provide a better understanding of the global atmosphere, provide earlier and better warnings of severe storms and other weather hazards, further the safety and efficiency of air and sea travel in all parts of the globe, benefit industry, commerce and agriculture and improve land and water management.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 23, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-252

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MARSHALL SPACE FLIGHT CENTER, Ala. -- A supplemental contract agreement has been issued by the NASA-Marshall Space Flight Center to the McDonnell Douglas Corp., in Santa Monica, Calif., for engineering changes in connection with Saturn V S-IVB stage work.

The agreement, amounting to \$2,395,955, calls for a qualification test program to verify the capability of maintaining S-IVB stage auxiliary propulsion system modules for up to 90 days with propellants loaded.

The S-IVB stage is used as the third propulsion unit of the Saturn V rockets. The stages are also used on the smaller Saturn IB rockets used for earth orbital operations.

This action brings the total value of the contract with McDonnell Douglas to \$965,568,493.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 25, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-253

MARSHALL SPACE FLIGHT CENTER, Ala. -- Three contract modifications totaling \$4,652,364 have been issued to the Boeing Co., in connection with Saturn V research and development.

In the first assignment, the NASA-Marshall Space Flight Center asked the Boeing Co., to install more than 4,000 instrumentation and data acquisition items in a special second stage structural test verification program underway in the Marshall Center's Propulsion and Vehicle Engineering Laboratory. The work relates to ground tests to confirm the design of a lighter weight, but more powerful second stage that will fly as part of the fourth Apollo/Saturn V, and subsequent vehicles.

The work will cost \$1,100,443.

In the second modification, MSFC asked Boeing to perform an abort and alternate mission analyses for Apollo/Saturn vehicles 503 through 510.

Under this \$2,237,268 modification, Boeing will study prime mission objectives and propose various alternate missions that may be taken by each flight based on various failures that could develop during the powered phase. This would be in order to obtain at least a partial mission success despite certain failures that could occur.

In the third proposal, Boeing is being asked to perform a reliability, quality and component qualification program, special pre-launch analyses, telemetry systems, and a Saturn V Apollo operations system safety program.

This modification amounts to \$1,314,653.

The total value of the Boeing Saturn V Systems Engineering and Integration contract is now \$213,443,238.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 28, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Maurice Parker - residence 859-0121)

Release No. 68-255

MARSHALL SPACE FLIGHT CENTER, Ala. -- Two technical meetings, involving several NASA organizations, are being held this week at the NASA-Marshall Space Flight Center.

The Research and Technology Advisory Committee on Space Vehicles is holding a two-day meeting that began today (Oct. 28). The Apollo Crew Safety Panel is scheduled to meet Wednesday, Oct. 30.

Approximately 28 people are attending the Research and Technology Advisory Committee on Space Vehicles meeting, including representatives from industry and universities, NASA Headquarters and six field centers, and other government agencies. They were welcomed to the Marshall Center by Dr. Wernher von Braun, MSFC director.

The meeting is primarily concerned with the economic aspects of space vehicles, especially the savings that are possible through technological improvements; reusable launch vehicles; and future space vehicles (in the 1970s). Preliminary interim reports on space vehicle economics will be presented by an ad hoc group of the Committee.

Committee chairman is Dr. Ronald Smelt, vice president and chief scientist of Lockheed Aircraft Corp., Burbank, Calif. Chief MSFC representative is Dr. W. A. Mrazek, Industrial Operations assistant director for engineering.

The Apollo Crew Safety Panel, consisting of about 45 to 50 representatives from NASA Headquarters, three field centers and several NASA contractors, will meet Oct. 30 to discuss vehicle failure modes and to analyze the emergency detection system (EDS) operation on the Apollo/Saturn 205 (Apollo 7) flight mission earlier this month.

R. G. Smith is MSFC co-chairman for the panel, and Tom Benton is MSFC co-secretary. Both men work in the Systems Engineering Office of Research and Development Operations. The Marshall Center and the Manned Spacecraft Center, Houston, share the duties of chairman and secretary.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 29, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-256

MARSHALL SPACE FLIGHT CENTER, Ala. -- Certain work related to the Apollo/Saturn V program will be performed under a \$1,404,548 contract modification signed between the NASA-Marshall Space Flight Center and the Boeing Company.

Under provisions of the award, Boeing is being asked to predict and evaluate orbital heating effects of liquid hydrogen boil-off. Liquid hydrogen is the supercold propellant used in both the second and third stages of the large Saturn V rocket. During a typical lunar mission, the third stage goes into earth orbit with the Apollo spacecraft attached and is subsequently restarted to propel the Apollo on a translunar trajectory.

Other work associated with the contract includes providing the Marshall Center with thermal criteria and profiles relating to the second stage scheduled to fly on the fourth Apollo/Saturn V launch; certain assistance in connection with preflight reviews for Saturn V vehicles through AS-510; and configuration accounting.

The award brings the Boeing contract value to \$212,128,585.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

October 29, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-257

MARSHALL SPACE FLIGHT CENTER, Ala. -- Werner R. Kuers, director of the NASA-Marshall Space Flight Center's Manufacturing Engineering Laboratory since 1961, will retire from government service on November 1.

Kuers has guided the Manufacturing Engineering Lab during a period which saw many significant achievements in manufacturing engineering, process development and fabrication research.

The 61-year-old Kuers became director of the laboratory when the Marshall Center was engaged in building eight first stages for the highly successful Saturn I program. Fabrication of these stages was subsequently turned over to the Chrysler Corp. for building the last two Saturn I boosters and the Saturn IB first stages.

Following the Saturn I project, the laboratory was engaged under Kuers' direction in building and assembling four Saturn V first (S-IC) stages. This was carried out jointly with Boeing Co. Boeing manufactured and provided the components for the S-IC stages.

He came to the Marshall Center in 1960 when the von Braun group, then working with the Army Ballistic Missile Agency, became the nucleus for the Marshall Center. He had been a member of ABMA since its activation in February 1956. Prior to that time, he had been in charge of process engineering

for six years on the Redstone missile project of Redstone Arsenal.

Kuers came to this country with the von Braun group following World War II. Before coming to Huntsville he was assigned for five years to the Ordnance Research and Development Division at Fort Bliss, Texas.

He had been a member of the Missile Development Center at Peenemuende, Germany, for three years and a member of the V-2 missile team.

Kuers is a concert musician and for a time served as concert master of the Huntsville Symphony. He has been active for several years in Huntsville classical music circles and in other civic activities.

Kuers said he plans to spend the first year of his retirement traveling to South America and Europe.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

7 November 6, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-262

MARSHALL SPACE FLIGHT CENTER, Ala. -- Dr. Mathias P. Siebel has been named director of the NASA-Marshall Space Flight Center's Manufacturing Engineering Laboratory. The appointment was made by Dr. Wernher von Braun, MSFC director.

Siebel replaces W. R. Kuers, who retired November 1.

Dr. Siebel, 44, has been deputy director of the manufacturing laboratory since he came to the Marshall Center in 1965.

Born in Germany and educated in Egypt and England, he came to the United States in 1957 and became a U. S. citizen in 1962.

Dr. Siebel holds a bachelor of science degree in mechanical engineering from the University of Bristol in England. He completed his doctoral requirements there in 1952. His primary research work was in experiments to verify certain mathematical theories of plasticity.

In the U. S. he has been a research associate and teacher in the mechanical engineering department at Columbia University and has held several engineering management positions in industry.

The MSFC group he heads is charged with prototype manufacturing and the development of new manufacturing and assembly techniques. It is a part of the center's Research and Development Operations.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

November 8, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-264

MARSHALL SPACE FLIGHT CENTER, Ala. -- Continued production support of J-2 engines used on both the Saturn IB and Saturn V rockets results from the signing of a \$22,826,736 contract modification between the Rocketdyne Division of North American Rockwell Corp., and the NASA-Marshall Space Flight Center.

The modification also contains certain requirements that would make the complex engines more versatile and thus able to carry out a variety of space missions. Engineering simplifications are included in the work order as well.

The contract includes a basic J-2 engine effort to design, test, and evaluate a modification to the engine that would reduce the minimum restart time to 80 minutes.

The J-2 engine now used to power the top stage of a Saturn V rocket first burns until the Apollo spacecraft attains orbital velocity. Then it must "coast" for a minimum of 90 minutes before being restarted for a powered flight that places the Apollo into a translunar trajectory.

Work to be performed under the contract further calls for a program of preliminary design and analysis that explores the possibility of restarting the J-2 within 15 minutes after shutdown in earth orbit.

Other work under the contract calls for research into possible simplification of the J-2 engine. Such changes, if proven feasible, could provide a broad latitude of missions including payloads into synchronous orbit as well as lunar journeys.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

November 8, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Curtis Hunt - residence 852-1763)

Release No. 68-266

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has issued a \$239,000 contract to the Boeing Company for a ten-month study defining a two-stage derivative of the Saturn V launch vehicle. Contract administration is under the supervision of the Marshall Space Flight Center which is responsible for development of the Saturn family of space launch vehicles.

Title of the study is "Saturn V Derivative Launch Vehicle System". The vehicle to be studied consists of the first (S-IC) and third (S-IVB) stages and the instrument unit (IU) of the Saturn V, plus payload. Such a vehicle would be capable of placing a payload of up to 158,000 pounds into low earth orbit. This is in the range between the 40,000 pound capability of the Saturn IB and the 280,000 pound capability of the three-stage Saturn V.

A number of configurations are possible using the S-IC and S-IVB as the basic vehicle. By varying the number of F-1 engines in the S-IC stage from two to five the vehicle can be tailored for missions to low earth orbit with payloads ranging up to 158,000 pounds. The first phase of the study will result in selection of a single baseline launch vehicle for further study.

For example, an S-IC with four F-1 engines plus an S-IVB could place 132,000 pounds into low earth orbit. This vehicle with five engines could inject into a 262 nautical mile earth orbit the Saturn I Workshop plus its airlock and multiple docking adapter plus the Apollo Telescope Mount plus the Apollo command-service module and a three-man crew. Three Saturn IB vehicles would be required to do the same job.

The same vehicle could be used for resupplying space stations in earth orbit. It could be used for synchronous orbits, unmanned flights to the moon and unmanned planetary flights. The two-stage version, called "Intermediate 20" for short, could take about 35,000 pounds to the moon, 22,000 pounds to Mars, or 15,000 pounds to synchronous orbit.

With a Centaur third stage, the vehicle could send about 15,000 pounds to Jupiter or Saturn.

The use of a two-stage Saturn V for missions not requiring the full three-stage vehicle would result in major savings. One-time costs of vehicle modifications and changes to ground support equipment and launch facilities would cancel about 50 percent of the savings for the first vehicle. Full savings would be realized on all subsequent launches.

The S-IC stage is manufactured by the Boeing Co. at the NASA-Michoud Assembly Facility at New Orleans, a branch of the Marshall Center. The S-IVB is manufactured by the McDonnell Douglas Astronautics Co. at Huntington Beach, Calif., and the Instrument Unit is fabricated by the International Business Machines Corp. at Huntsville, Ala. The Centaur is a product of General Dynamics, San Diego. North American Rockwell of Downey, Calif. is the producer of the

S-II (second) stage of the Saturn V and Apollo spacecraft.

Factors to be considered in the first phase include: Varying the number of F-1 engines in the S-IC from two to five; determining the impact of acoustics and thermal environment with these different engine combinations; vehicle impact sensitivity to increasing acceleration from 4.68 to 6.0 times the force of gravity and reducing the safety factor from 1.4 to 1.25; using either J-2 or J-S engines in the S-IVB; incorporating a Centaur, Apollo service module or another S-IVB as a third stage, relocating the IU to guide the third-stage; and using a constant diameter payload.

The second phase of the study will be the preliminary design of the selected vehicle and development of an implementation plan. Modification kits to convert the standard Saturn V equipment will be designed, interface matching of several possible third stages with the baseline vehicle will be investigated, and normal IU separation plane location and IU performance capabilities for the third stage and payload will be identified.

Research, development, test and engineering program development will be the third phase of the study. The program prepared for the selected vehicle will include:

Development, fabrication and flight test program; supporting reliability program; supporting research and technology program; a program reflecting ground-based support equipment changes and new or modified manufacturing, test, ground support equipment transportation facilities and requirements; and cost and schedule plan.

Technical investigations will be aimed at determining the requirements for producing vehicles with 4.68 and 6.0 "g" maximum acceleration capability considering vehicles with two, three, four or five F-1 engines in the S-IC.

A study of the design and cost impact will be made using the J-2S engine instead of the J-2 in the upper stages. The J-2S, for the S-IVB stage, is considered as a simplified J-2 engine operable in either an idle mode or a normal operation mode with restart capability as well as increased thrust and specific impulse.

Being investigated under a contract with the McDonnell Douglas Astronautics Co. is the impact of the self-ullaging idling mode, multiple restart capability, and the elimination of time lapse requirements between restarts on S-IVB performance.

Performance data will be calculated using J-2S engines, including nominal 19,300 nautical mile synchronous and 100 to 300 nautical mile polar orbit payload capability.

Vehicle impact and high energy performance gains for using another S-IVB stage, Centaur or service module as a third stage for the launch vehicle will be investigated in the study. IBM will investigate IU compatibility for third stage and payload operational functions.

Preliminary design layouts of stages and IU subsystems will be prepared as well as for modification kits -- with reversibility of the modification procedure to be considered in kit definition. Structural modifications to stages will be determined by the respective stage contractors under subcontract to Boeing.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

November 12, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-267

MARSHALL SPACE FLIGHT CENTER, Ala. -- Three NASA-Marshall
Space Flight Center men will receive high space agency awards at ceremonies
November 15 in Washington, D. C.

Dr. Arthur Rudolph, special assistant to the director, will receive the
NASA medal for exceptional service.

Receiving the NASA medal for exceptional scientific achievement will be
Otto A. Hoberg and Hans H. Hosenthien, both of the MSFC Astrionics Laboratory.

The Marshall Center men are included in a group of prominent space agency
employees scheduled to receive awards at ceremonies at 2 p. m. in the Health,
Education and Welfare auditorium.

Dr. Rudolph, former Saturn V Program manager, is being cited for
"distinguishing himself by meritorious achievement" as Saturn V program manager
from August 1963 through May 1968.

Hoberg's award for exceptional scientific achievement cites the work he has
done in planning, designing and developing complex instrumentation and
communications systems and for other contributions to the nation's largest launch
and space vehicle programs. Hoberg is assistant Astrionics Laboratory director.

Hosenthien's award is for exceptional scientific and engineering accomplish-
ments in the solution of the many problems related to the broad field of guidance
and control which contributed to the successful launch vehicle programs. He is
chief of Flight Dynamics in the Astrionics Laboratory.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

December 6, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-276

MARSHALL SPACE FLIGHT CENTER, Ala. -- Several major organizational changes were announced to employees today by Dr. Wernher von Braun, director of the NASA-Marshall Space Flight Center.

Dr. W. R. Lucas, director of the Propulsion and Vehicle Engineering Laboratory will become Director for Program Development on Dec. 16.

Dave Newby will assume the duties of Director of Center Operations on the same day.

Named to the post of MSFC Associate Director for Science is Dr. Ernst Stuhlinger, presently director of the Space Sciences Laboratory. Dr. Stuhlinger's appointment is also effective on Dec. 16.

All three of these are new positions.

The names of the present two major MSFC operations, Research and Development Operations and Industrial Operations, will be changed, and the present directors will continue in their positions.

Research and Development Operations will become Science and Engineering. Hermann K. Weidner is the director.

Industrial Operations will become Program Management. E. F. O'Connor is the director.

Dr. von Braun said the post of Director of Program Development was established "to strengthen the Center role and contribution to future NASA programs." The Advanced Systems Office will become the initial element of this organization. The major function of the new organization will be to "harden" complete package plans for promising new programs, such as the space station.

While Advanced Systems Office will become a part of this new organization, he said, the role of the new element will go beyond the functions of that office. "It will not only study options and technical approaches, but will also address itself to our ability as a Center to do certain tasks, to determine the resources to be tied up, the contractor support required, and to determine how the requirement for in-house effort will fit into our desires and capabilities.

"The Director for Program Development will help chart the course for this Center in the post-Apollo period, keeping in mind our Apollo Program requirements and AAP obligations," the director said. He characterized the mission of the Director for Program Development as a new function and the purpose is to establish a viable center which can bring the full impact of its broad capabilities to bear on the space program in the post-Apollo period.

Dr. von Braun said "plans are proceeding for the consolidation of Center administrative functions under one major line element to be entitled Center Operations," headed by Newby.

Dr. Stuhlinger, as new associate director for science for the Marshall Center, "will penetrate and review all science oriented activities of the Center to ensure that our total science program is of the highest calibre. His functions will be to provide a dynamic interface with OSSA (the NASA Office of Space Science and Applications in Washington) and the scientific community, ensure that scientific efforts within the Center are vigorously pursued, and contribute to the formulation of science related new programs," Dr. von Braun stated.

Karl Heimburg, director of Test Laboratory, will become director of the Propulsion and Vehicle Engineering Laboratory. Dr. von Braun said "we are considering combining the P&VE and Test laboratories. Pending the final decision on the proposed combination, Bernhard Tessmann will manage the Test Laboratory in his present capacity as deputy director.

The Space Science Laboratory remains an element of Science and Engineering.

Action is also underway to combine elements of the Saturn IB and Saturn V Program Offices into a Saturn Program Office. Lee James will be manager. James actively assumes management of these combined programs on Dec. 9. The AAP Program Manager, Leland Belew, will expand his program organization consistent with program progress and new assignments.

The director indicated additional details of organizational changes will be forthcoming. With the basic framework organizational structure now agreed upon, these newly-named officials will work with the center director to further define operating modes and to fill out the organization.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

December 17, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Joe Jones - residence 852-8847)

Release No. 68-278

MARSHALL SPACE FLIGHT CENTER, Ala. -- The Marshall Space Flight Center and the Huntsville Section of the American Society for Quality Control will sponsor a symposium March 17-19, 1969 on "Long Life Space Hardware."

Three to five technical papers will be presented at each of six half-day sessions on parts, materials, management, testing, component design and system design.

Speakers for the sessions will be recognized experts in their areas of specialty, selected by the steering group of the symposium and invited to speak without an open call for papers.

The meetings will be held in Morris Auditorium of Building 4200 at the Marshall Center. Buses from the Center will carry out-of-town visitors between the auditorium and their motels.

Pre-registration announcements will be ready in January. Pre-registration on a first-come-first-served basis will be necessary due to auditorium size, expected wide interest and the unusual assembly of highly qualified speakers.

General chairman for the symposium will be Dieter Grau, director of the Quality and Reliability Assurance Laboratory at the Marshall Center.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

December 27, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Don Lakey - residence 883-0976)

Release No. 68-283

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued a supplemental agreement to a contract with the Boeing Company that extends maintenance and operation of a Saturn V development facility here. The award also provides for certain mechanical ground support equipment and logistics work.

The agreement, amounting to \$8,429,047, calls for the work to be performed in Huntsville, Ala. The period of performance started in October and continues through March, 1970.

The Saturn V development facility located at MSFC is actually an electrical and mechanical simulation of the NASA-Kennedy Space Center, Fla., launch complex. Automatic computer tapes used during launches are run through the facility to verify accuracy.

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Public Affairs Office
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, Alabama

December 31, 1968

IMMEDIATE RELEASE

Phone: 876-1102, 876-1959
(Charles Kurtz - Fayetteville, Tenn. 433-4958)

Release No. 68-284

MARSHALL SPACE FLIGHT CENTER, Ala. -- Two manned Saturn launchings were among the most significant events of 1968 for the Marshall Center.

Both the Saturn V and Saturn IB launch vehicles were manned for the first time in 1968. The giant Saturn V for the Apollo 8 mission and the Saturn IB vehicle that launched the Apollo 7 spacecraft were designed and developed by the Marshall Center and its contractors.

The Saturn V performed flawlessly on Dec. 21 when it sent Astronauts Frank Borman, James Lovell and William Anders on a flight which reached moon orbit on Christmas Eve. The three-stage rocket was launched on schedule at the Kennedy Space Center. The third stage engine was ignited a second time in earth orbit to speed the three astronauts to more than 24,000 miles an hour -- the fastest speed man has ever achieved.

A Saturn IB vehicle had placed the first manned Apollo spacecraft into earth orbit on Oct. 11. Astronauts Walter Schirra, Donn Eisele and Walter Cunningham, spent almost 11 days in space on the Apollo 7 mission.

Two other Saturn vehicles were sent into space in a busy and eventful 1968. The Apollo 5 mission was launched on Jan. 22 when a Saturn IB carried an unmanned lunar module spacecraft into orbit for its first space test. An unmanned Saturn V, the Apollo 6 mission, was launched on April 4. This was a vehicle and spacecraft development test in which the spacecraft made a simulated translunar coast ellipse.

MORE

During the Apollo 6 flight, two problems arose involving vehicle propulsion, but both were solved before the Apollo 8 flight and that vehicle did not experience either difficulty.

Apollo Applications Program work increased during 1968 and is expected to continue in the coming year. NASA reassigned management responsibility for the Saturn I Workshop airlock and the modified lunar module **ascent** stage for the Apollo Telescope Mount to the Marshall Center in September. The Manned Spacecraft Center formerly managed these projects.

The realignment was made to establish a satisfactory balance between Apollo Applications and Apollo programs and places AAP design integration responsibilities under a single NASA center.

The Marshall Center already had design responsibility for the Saturn I Workshop, conversion of an S-IVB into a space station, and the Apollo Telescope Mount rack and experiments. ATM will be used as a manned orbiting solar observatory.

The AAP payloads are expected to fly aboard Saturn IB launch vehicles early in the 1970's.

NASA announced in December that the remaining Saturn IB launch vehicles in the fleet of 14 vehicles will be stored and kept in readiness by their respective manufacturers until they are needed.

The Saturn IB launch vehicle has record of five successful flights in as many launches. It has completed its mission in Project Apollo. The vehicles will be stored until the beginning of the launch phase of Apollo Applications Program sometime in 1971.

Plans for a major reorganization was announced at the Marshall Center in early December. Several appointments were made then subject to review and approval by NASA Headquarters.

The changes would include the appointment of Dr. William R. Lucas, formerly director of Propulsion and Vehicle Engineering Lab, as director for Program Development; David Newby, associate deputy director, administrative, to director of Center Operations; and Dr. Ernst Stuhlinger, former director of the Space Sciences Lab, to MSFC Associate Director for Science.

Research and Development Operations has become Science and Engineering. Hermann K. Weidner is the director. Industrial Operations is now Program Management and E. F. O'Connor is the director.

Two other major changes anticipate the appointment of Karl Heimburg, former Test Lab director, as new director of Propulsion and Vehicle Engineering Lab, and Lee B. James, Saturn V Program manager, as manager of the newly created Saturn Program Office. The new organization contains the Saturn IB and Saturn V program offices.

The Center's civil service personnel strength dropped in 1968 by 700 people. There were 7,000 permanent civil service workers at the start of the year and there are presently about 6,300 on the payroll. The MSFC payroll in 1968 totaled \$82.9 million.

The Center has a ceiling of 5,981 personnel to be met by July 1, 1969 through normal attrition. This decrease in personnel is being caused by cutbacks in the budget.

The number of direct support contractors at the Marshall Center during the year has decreased approximately 1,200 workers. There are now about 2,700 support contractor workers employed on MSFC projects at Redstone Arsenal.

Three Marshall Center men received high space agency awards at ceremonies Nov. 15 in Washington, D. C.

They are Dr. Arthur Rudolph, special assistant to the director, Otto A. Hoberg and Hans H. Hosenthien, both of Astrionics Lab.

Rudolph received the NASA medal for exceptional service for his work as Saturn V Program manager. Hoberg and Hosenthien both received the NASA medal for exceptional scientific achievement.

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